Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL AND OTHER IMPROVEMENTS.

VOLUME VII.] NEW-YORK, MARCH 20, 1852. [NUMBER 27.

THE
Scientific American,
CIRCULATION 16,000.
PUBLISHED WEEKLY
At 128 Fulton street, N. Y., (Suu Buildings)
BY MUNN & COMPANY.

Hotchkiss & Co., Boston.
Dexter & Bro., New York City.
Stokes & Bro., Philadelphia.
Jno. Thomson, Cincinnati, O.
Cooke & LeCount, San Francisco, Cal.
Courtenay & Wienges, Charleston, S. C.
John Carruthers, Savannah, Ga.
M. Boullemet, Mobile, Ala.
Sidney Smith, St. Louis, Mo.
Barlow & Co., London.
M. M. Gardissal & Co., Paris.

Responsible Agents may also be found in all the principal cities and towns in the United States.

Terms—$2 a-year—$1 in advance and the remainder in 6 months.

RAIL-ROAD NEWS.

Whitney's Railroad.

This project is being agitated in Washington again, and has engaged no small amount of time and expense to the nation by the consideration which has been given to it, from time to time, by Congress. "If this scheme is carried out," says "Observer," the able correspondent of the Philadelphia Ledger, "it will create the largest monopoly yet attempted in this country." The report of Congress on the subject states that he (Whitney), would acquire by the grant 78,000,000 acres of land, which, at 50 cents an acre, would amount to $39,000,000.

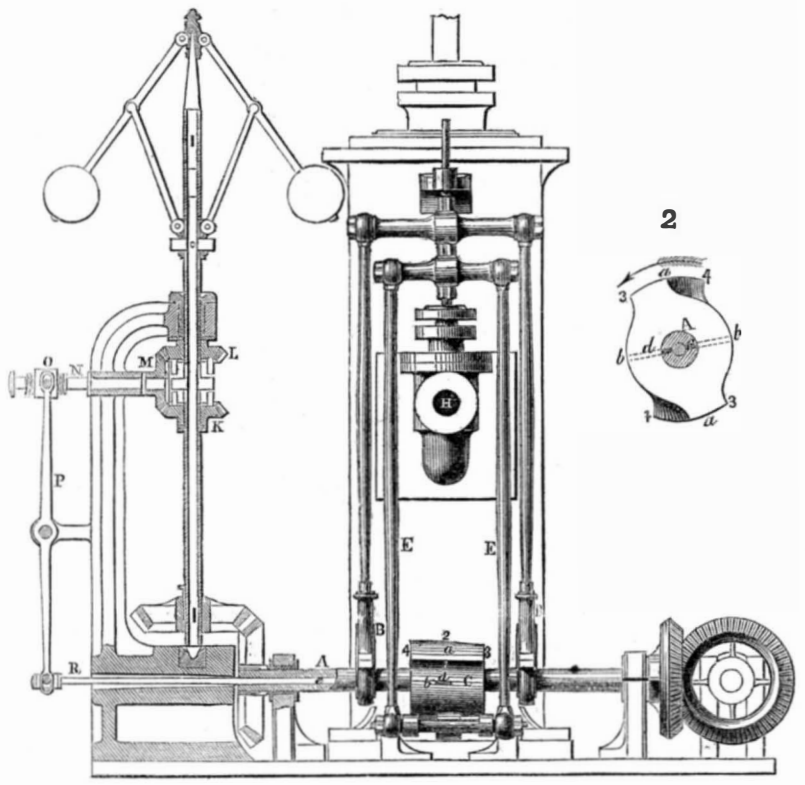
We like to encourage improvements, but we do not like a hot-bed system of stimulating the construction of a railroad to the Pacific. The grant of land demanded to construct 800 miles of railroad is very nearly equal in extent to all England, and more than the whole State of Pennsylvania or New York. Is there any citizen prepared for such a monopoly? If such a road is to be constructed, let it be done by the government, or let it be put up and let out by contract to the lowest bidder. It is not long since the British Government granted the whole of Vancouver's Island to the Hudson Bay Co., for some services *to be performed*, these grants are remnants of the Feudal Ages.

If it can be demonstrated that such a railroad will pay for the money invested, there are capitalists enough in the country, we believe, to take stock in it to the amount of $100,000,000, and this, without allowing any man the grant of a territory equal in extent to a State like New York. If it will not pay for itself after being constructed, then it will be a continual tax on the country, therefore, before any bill should pass Congress for this road, it should be thoroughly surveyed by U. S. Engineers, and reported on by them, so as to give us all the necessary information respecting its best route, probable expense, &c. We should like to see a railroad constructed as soon as possible to the Pacific, but then we are very much in the dark about the route. We hope Congress will not act upon this subject blindfolded. All the engineering survey which has yet been made for a Pacific railroad is that by James Kirkwood, C. E., for the section of Missouri. His Report is satisfactory to those who wish to take facts and figures for their guide, it is not so with the unsurveyed route of Whitney.

Cleveland and Wellsville Railroad.

The ceremony of opening the Cleveland and Wellsville Railroad, took place on the 4th inst., when a party of several hundred made the trip from Cleveland, Ohio, to Wheeling, Va. Since then the citizens of Wheeling were to hold a town-meeting, to adopt measures to build a railroad from the proposed terminus of the Baltimore and Ohio road, at that city, to Wellsville. This will give the city of Baltimore direct communication with the lakes

ORTLIEB'S CUT-OFF FOR STEAM ENGINES.---Fig. 1.



The accompanying engravings illustrate an improved cut-off, for operating the valves of steam engines, which has been invented by Mr. Frederick Ortlieb, of Wappinger's Falls, Duchess Co., N. Y., who has taken measures to secure a patent for the same. The nature of the invention consists in the employment of a peculiar cam, which is placed on the shaft that operates the slide valve, or its equivalent, or by placing the said cam upon an independent shaft to operate the valve as will be described. The cut-off valve is also connected by its variations of speed, through the peculiar cam, which is moved on a spindle longitudinally, so as to operate the valve and cut off the steam sooner or later, according to the velocity of the governor, thus regulating the expansion of the steam, and making the engine work at a uniform speed.

FIG. 3.

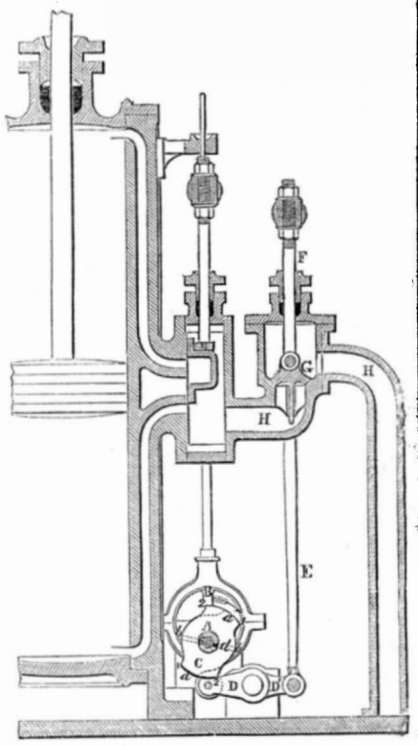


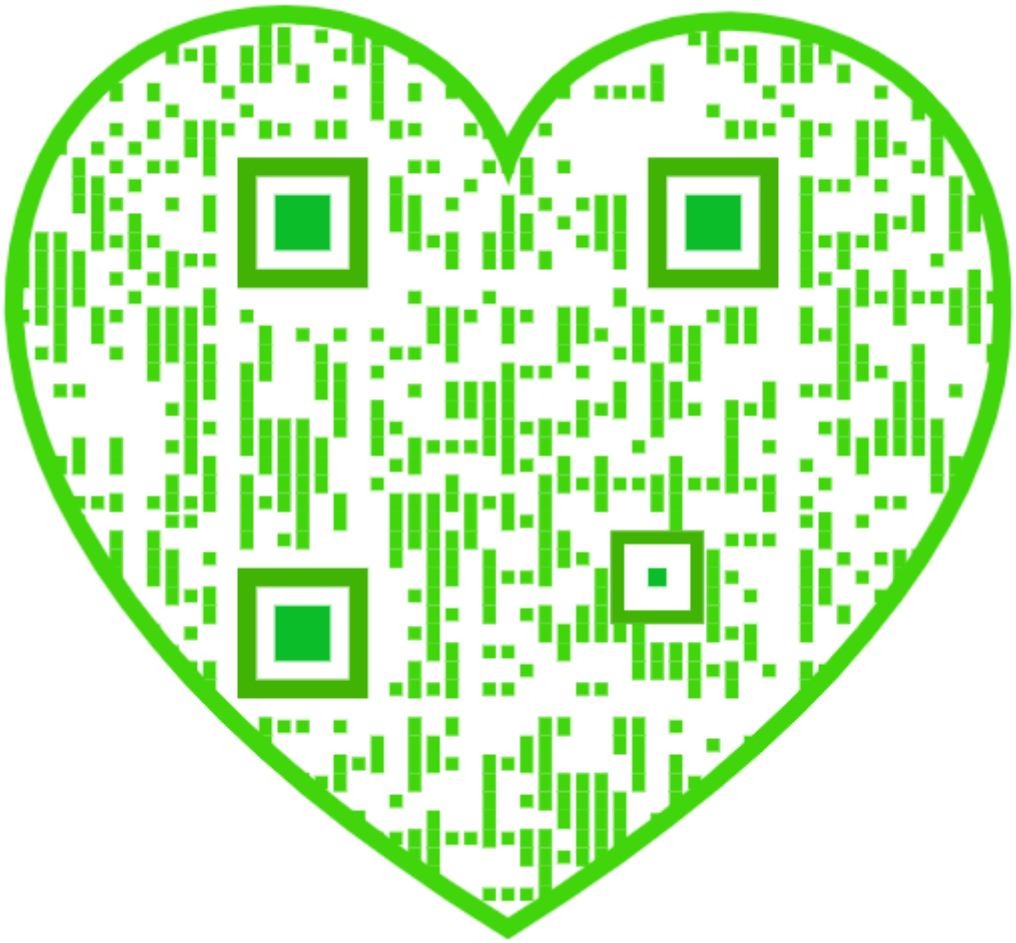
Figure 1 is a front elevation; figure 2 exhibits the opposite end of the cut-off cam to that shown in figure 3, which is a sectional elevation. The same letters refer to like parts on all the figures.

A is the way shaft, it is intended to be driven at the same speed as the main shaft of the engine; it carries the eccentrics, B B, to which are connected the rods, E E; to them is attached the cross-head of the valve rod, F. C is the peculiar cut-off cam; its form is that of a cylinder with parts of its periphery cut away on opposite sides of its axis, so as to leave two parts, *a a*, standing full. These standing parts form toes; one edge, 1, of each of these toes is straight and parallel with the axis; the other, 2, runs spirally. The faces of the toes, *a a*, are parts of the periphery of the cylinder, and are therefore perfectly parallel with each other longitudinally, and with the axis. The least prominent parts or heels, *b b*, of the cam, are all parallel with each other and with the axis, and form portions of a smaller cylinder than the outside, *a a*. The ascent and descent to and from the toes, is as sudden as is consistent with the proper action of the cam upon a roller or device, by which the said cam operates the valve rod; the form of the cam is the same throughout its whole length. It fits easily upon the shaft, A; *c* is a narrow slot cut through the shaft, A, its length is about that of the cam, and a key-way is cut diametrically through the cam to receive a key, *d*, which passes freely through the slot, *c*, but fits tightly in the cam. This key prevents the cam from turning on the shaft, but allows it to slide longitudinally. The shaft is bored cylindrically and is tubular for a great portion of its length. Into the bore of the shaft is fitted a small rod, *e*, which is connected to the cam and secured by the key, *d*, which passes through it; by moving this rod longitudinally —drawing it or pushing it horizontally—the cam is moved or made to slide backwards and forwards on the shaft. It is by this action that the cam is made to actuate the valve-rod to make it cut off the steam with a shorter or longer stroke according to the velocity of the governor. R is the rod of the cam; P is a lever connected to the rod by an eye hooked over a pin at the foot. This lever is secured on a fulcrum pin; N is a revolving spindle with a bevel pinion, M, on its inner end; O is a screw or thread cut in this spindle. On the lever, P, at its top, is a pin, the inner end of which fits into the threads of the screw. It will therefore be easily perceived that according to the direction in which the spindle, N, is made to revolve, so will the screw draw in or work outwards the upper end of the lever, P, which will so actuate the rod, R, as to draw the cam to the left, or to the right, so as to make a smaller or greater surface of the toes, *a a*, act on the roller. (as seen in fig. 3) of the valve-rod, to cut off quicker or not, as the case may be. The governor directs this action. On the common sliding collar of the governor there is a bevel pinion, K, at the foot and one, L, further up. There are two pins standing up on the inside of the pinion, K, and two projecting down from the one, L. In fig. 1 there is a cross pin on the spindle of the governor. It is now revolving between the bevel pinions, and the fixed action of the governor and engine is now represented in the said figure. If the velocity of the governor, however, were increased, the slide collar would be drawn up, the pins of the lower pinion, K, would be caught by the cross pin on the vertical spindle, and then the bevel pinion, M, and K, would mesh, motion would be given to the spindle, N; the screw would act upon the pin of the lever, P, drawing in the upper end of said lever, thereby thrusting out its lower end, and drawing the cam rod, R, with its cam further out, so as to bring the smaller toe surface to act upon the roller of the vibrating-valve lever, D D E, and thus cut off quicker according to accelerated velocity of the governor, beyond the uniform speed, so as to bring back the engine rapidly to the standard speed. When the velocity of the governor falls below the average speed, the slide of it drops and the upper pinion, L, takes into M, and revolves N in a contrary direction, so as to draw out the pin of the lever, P, by the screw, and thus push in the rod, R, to make the larger toe surface of the cam, C, act on the roller of the valve-rod lever, D D E, to give the cylinder a greater quantity of steam to bring it up to the standard speed. It is the intention of the inventor to apply it to the puppet valve, but not limit it to this application. In figure 3, H is the steam-pipe, which enters a steam box, in which is the puppet valve, G, which is the one operated by the cam, C, and the roller-lever, D D E. This steam-box of G opens by the inside pipe, H, into a common slide-valve box, the valve of which is operated by the eccentrics on the main shaft, as shown in said fig. The cam revolves in such a direction that the parallel edges, 1, of the toes come first into operation, and these edges operate on the valve at the precise moment the engine is on the dead centre, hence the valve is always open to its fullest extent at the precise moment when the full pressure of steam is required. The valve remains open wide all the time the face of the toe is in operation on the lever-roller. As soon as the edge, 2, of the cam, passes the roller the valve is closed and so remains till the step in front of the edge, 1, of the next toe comes into operation on it, which it will do just before the conclusion of the stroke, so that the valve may be full open when the engine is on the next centre. The cam opens the valve suddenly and allows it to be closed suddenly, and keeps it wide open till the steam is cut off, and thus this cam is decidedly a very great improvement.

It will be observed by fig. 2 that the spiral line of the cam, is so set out that the narrowest ends, 3 3, of the faces of the toes shall bear just such a proportion to the half of the circumference of the cam as it is desired, that the shortest portions of the stroke of the piston under full steam, shall bear to the entire stroke, say one-eighth, the widest parts, 4 4 shall bear the same proportion as the longest part of the stroke, say one-half. The steam will thus be cut off at one-eighth at one end, and one-half at the other.

More information may be obtained by letter addressed to the inventor.

© 1852 SCIENTIFIC AMERICAN, INC



MISCELLANEOUS.

The Extension of Patents by Congress.

The extension of patents by special acts of Congress, however republican it may appear to some people, as being acts of the immediate representatives of the people, is a wrong principle of legislation, and the acts springing from it, instead of being republican often partake of a most despotic character. What value would any man put upon legislative republic, assemblies, universal suffrage, and vote by ballot, if trial by jury and the law of habeas corpus were obliterated from our institutions? Very little indeed. When a patentee has not been able to obtain full remuneration for his invention during the first fourteen years of its existence, the patent law provides for the extension of the same for seven years. To do this, a fair trial is had upon the merits of the case; the patentee, and those who may be honestly opposed to the extension of the patent, are obliged to produce evidence for and against the extension. There is a trial of the case on its merits, and a decision rendered according to the testimony adduced. There is something fair in this, but it is otherwise with the application for the extension of a patent by Congress. The applicant may manage things with so much plausibiltiy, and concoct measures so secretly and discreetly for his own benefit, as to get a patent extended before the people are aware of any attempts having been made to get it. What would the public have known about the application for the extension of the Woodworth Patent, or the Patent for Parker's Water Wheel, but for the Scientific American? Nothing at all. Petitions for he extension of patents, by interested par ties, have been exceedingly voluminous during the present Session of Congress. There are no less than four applications for the extension of patents, now before Congress, viz., the famous Woodworth Patent (the present patent has nearly five years yet to run, and the attempt to get the extension now, was intended, no doubt, to be silent, deep, and irresistible—a *dark transaction*); the patent for Hotchkiss's Water Wheel; Parker's Water Wheel, and McCormick's Reaper. I would rejoice to see all the inventors of useful improvements amply rewarded for their inventions; and I am glad to see pirates of patent rights punished for their cupidity and dishonesty; still, it is no more than just and right that those who are interested in opposing certain patents should be heard, but for this no provision is made in respect to the extension of patents by special Act of Congress. A few years ago petitions were presented to Congress for the extension of a patent for "Wood's Plow," which, if it had passed by a special act, every American farmer would have had to pay 50 cents as a tax, if he used a cast-iron mould board. Wood was not the original inventor, neither, it seemed, but at one time it appeared as if the Bill would be passed by Congress. The people have to watch the actions of Congress like hawks, for tear that some mine, like that of the "Wood Patent," is not sprung upon them before they are aware of it.

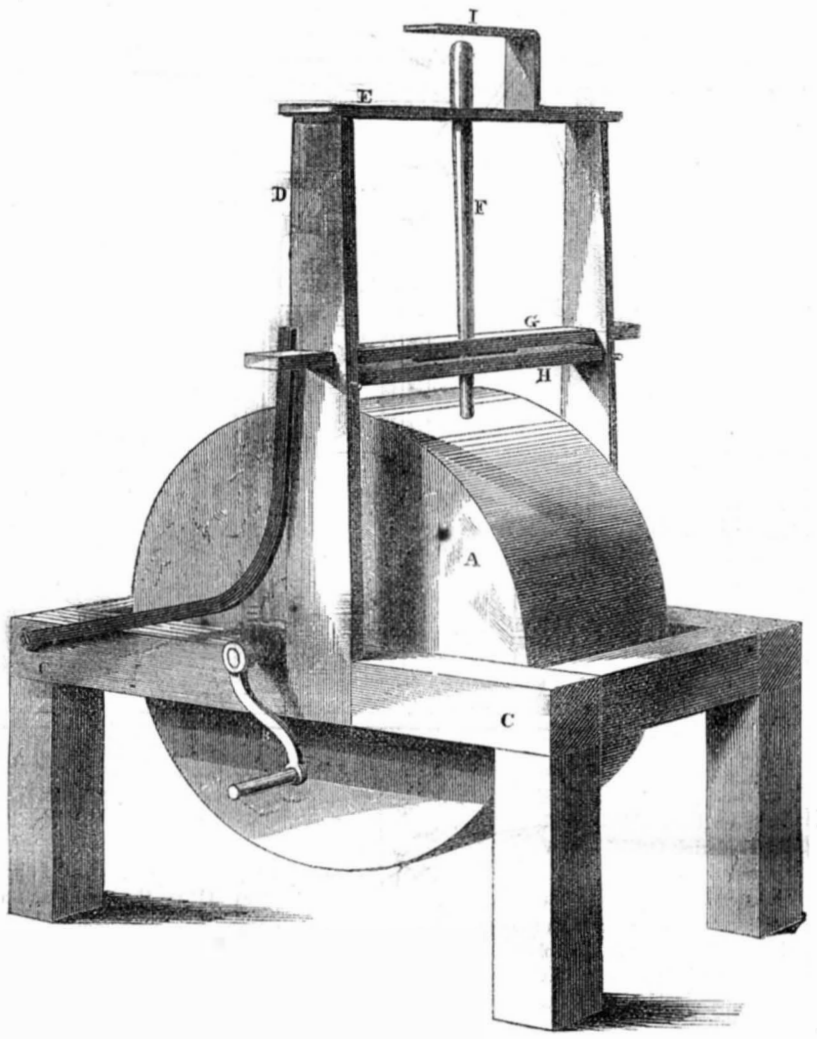
JUNIUS REDIVIVUS.

[I shall show, next week, that great injustice is often done by one inventor to another, by the mode which some patentees pursue to make money. J. R.

Fat People.

Dr. Chambers, of London, in a recent lecture before the Royal College of Physicians, on the subject of corpulency, considered it in the light of a hereditary disease, and endemic in several countries. The Anglo Saxon race, since the days of Erasmus, has exhibited a tendency to fatness, and it has often been remarked that, in London, there were more than one corpulent person in every hundred. The Irish and Scotch had few corpulent persons among them; the Americans are lean—so are the French and Italians. Fatness generally displays itself in well-fed persons, who indulge in ease and luxury. In the case of Mary, Queen of Scots, and Napoleon, fatness was brought on by confinement and grief. In nearly all cases, mental anxiety, or activity, has a thinning effect on the human system. In a healthy state, all human beings contain a portion of fat and in an adult person, it forms about one-twentieth of the whole weight. Without it, we would appear scraggy, like a withered apple. It fills up the interstices between the muscles, and gives a pleasing contour to the body. It facilitates motion, and acts as an external defence from the cold, and it perfoms the chemical office of supplying carbon for the system. It is the fat of hibernating animals which enables them to subsist during the long winter months. Liebig says, "the proximate condition of forming fat, is a deficiency of oxygen." The way to consume fat, is to increase the quantity of oxygen inspired by active physical exercise. No hunter, hard-working man, nor private soldier, is ever found in a fat state. If idle people wish to reduce their fat, they should reduce the quantity of this food. Dr. Chambers believes that the middle and upper classes of England eat a great deal too much food, and their moral and mental health is affected thereby, and the doctors do not insist enough on this branch of hygiene, for, knowing the weak points of their rich patients—their stomachs—they let the cook alone, and this gives them—the doctors—more work.

IMPROVED SELF-SHARPENING GRINDSTONE.



The accompanying engraving is a perspective view of an improved Self-Sharpening Grindstone, invented by Mr. Jesse Pannabecker, of Elizabeth Township, Lancaster Co., Pa.

A is the grindstone; B is the crank; C is the bed frame; D is the upright frame; E is the head-piece of the upright frame; F is the picker,—an iron rod passing through the head-piece, E, the circular aperture of the sliding cross-piece, G, the oblong aperture of the stationary brace or cross-piece, H, and resting upon the grindstone, A. By the operation of the grindstone the picker, F, is raised and thrown upwards against a cross-piece, I, which causes it to recoil upon the grindstone, A, thus keeping up a continual picking motion, sharpening the stone as required, and by the sliding cross-piece, G, the picker is moved to either side of the grindstone, and the sharpening process continued. If the grindstone should, in some parts, be softer than others, the soft parts or the parts most worn, are not operated on by the picker, because the lever, cam J, being then lowered, and resting upon the or eccentric, K, at each revolution of which it is raised against the sliding cross-piece, G, which raises the cross-piece and picker at the same time, and thus the picker is prevented from touching or striking the broken or soft parts of the grindstone.

The object of this invention is to use a hard grindstone, and wear it evenly at the same time. The greater number of stones are generally too hard, and get smooth and become useless, but by this mode every stone is useful. The stone being kept in continuous motion, according to the speed of the machinery of the factory, is, at the same time, regularly sharpened. And, again, by a high speed, stones are sometimes burst asunder, because they are too soft; but the great advantage now gained is to use the best of hard stone, which can, by this improvement, be kept all the while sharp, even during high speed, and the grain kept open, and no danger of the stone bursting. More work can be performed in grinding, and every stone that heretofore had to be thrown aside as useless, can now be made of value.

For more information address Mr. Pannabecker, of Durlack P. O., Pa.

A Great Drill.

There is now constructing at Souther's Globe Works, South Boston, a most stupendous drill for boring the tunnel through the Hoosac Mountain. The tunnel is to be 24 feet in diameter. The drill has a large wheel with a thin rim placed upon a revolving shaft. The rim is mounted with steam cutters, which are of such size, and so arranged, as to cut, when in motion, a circular trench or groove in the face of the rock, one foot in width, and of the diameter of the tunnel. The shaft is led forward with the sliding frame, by means of a powerful screw. The distance through which the shaft, with its wheel and cutters, is made to pass, is five feet for each adjustment of the machine, this distance being the depth of the rim upon the main wheel. Upon the end of the shaft, and in the centre of the circle described by the motion of the cutters, a drill of six inches diameter is attached. This drill enters with the cutters, and to the same distance in the rock. On the rim of the main wheel are buckets to conduct the rock cut away.

When the rim of the wheel has entered the rock to its full extent, the machine will be drawn back, a charge of powder placed in the central hole, and the rock within the circular trench will be removed at one blast. One of the arms of the main wheel is made removable, so as to allow a car to pass under the machine to the rock. The fragments broken away by the blast will then be loaded and drawn back to the mouth of the tunnel. The machine is again fed forward, and its successive operations will be the same as already described.

It will weigh, with its frame, from eighty to ninety tons. It is intended to work it with two stationary engines of forty horse-power each.

Galvanic Batteries.

We are requested by Prof. Mathiot, of Washington, whose name appears in the notice of a voltaic battery by Prof. Page, in Silliman's Journal, and copied by us in our last number, to state that Prof. Page is quite in error in supposing that the instruments which Prof. Mathiot exhibited to him in use, are the same in construction and purpose with the apparatus figured and described by Prof. Page, in Silliman's Journal, and in this paper last week, and that Mr. Mathiot, instead of thinking highly of Prof. Page's apparatus, is at a loss to conceive of any use it might be for, much less can he conceive how the learned professor can expect his instruments to possess the qualities and uses he claims for them, while they exhibit in their construction such gross disregard for the first principles of electro-chemistry. Prof. Mathiot further states that Mr. James Green, of 442 Broadway, New York, in conjunction with himself, effected a combination of the batteries of Smee and Kemp, in which improved battery nothing is consumed for which equivalent work is not obtained—which delivers its sulphate of zinc in the solid form, instead of in solution, gives a stronger current of quantity than any other battery of equal surface, will maintain a constant action for any desired time, and suffers no deterioration when not in use. These batteries were made of silvered and platinized wire-gauze, of perforated and platinized plates of silver and platinum, and of metal—lace or open-work plates made by electro-deposition. And all this was done in 1845-47, and Mr. Green has now in his store at 442 Broadway, some of the batteries then made; no other person ever had any.

He also says that no description of any battery answering to the above was ever published by any person in any journal prior to the present year, except by himself in the Scientific American for 1850.

Also he says that if any professor of science will controvert the above, that then he will, in the columns of this paper, by quotations from the scientific journals, and by mathematical and by chemical principles and reasons, prove that the above is entirely correct—and gives useful modes of constructing and using batteries never yet published.

Law of Patents.

We learn from the Herald, of Thursday week, that George Gifford, Esq., of this city delivered a lecture in the Circuit Court, new City Hall, Wednesday evening, on the law of patents for new inventions. "The attendance was very small, there not being more than thirty persons present, and amongst them there were but few members, whether owing to the notorious fact that gentlemen of the profession are not fond of attending the court without the *quid pro quo*, or the equally well-known fact that this particular subject is exceedingly dry and that the machinery, even though patent, does not work well unless copiously lubricated by the liquid eloquence of extraordinary oratory, we cannot pretend to say. The subject, however, is a very important one, and the lecture was worthy of a larger audience. It was well studied, and though somewhat elaborate, Mr. Gifford manifested an intimate knowledge of this branch of legal jurisprudence, which could not have been tedious to those who felt an interest in the subject."

Mr. Gifford is one of the most able patent attorneys in the country, and is fully competent to enlighten the legal profession upon all subjects connected with the law of patents.

Lake Superior Rising.

The water level in Lake Superior is higher this winter than it has been for a long period. At the mouth of Ontonagon river it is sweeping over the marks of its ancient boundaries, and uprooting trees of twenty or thirty years growth.

© 1852 SCIENTIFIC AMERICAN, INC

Marine Architecture—Yachts, America, England.

Mr. J. W. Griffiths, author of the able work on "Marine and Naval Architecture," has added some pages to a new edition of his work, the proof of which we have been kindly permitted to peruse, in advance of publication, from which we select the following:—

"Yacht building next comes in for a share of our attention. It were vain to speculate on the advantages to commerce accruing from the introduction of this particular description of vessels—of the antiquity or utility of the custom of building vessels for the avowed purpose of pleasure, it is not our province to inquire; nor would Americans (whose crude notions of science in ship building are regarded by a portion of the English press as little better than a contemptuous violation of the royal mandates) have ventured to cross the threshold of the sporting circles of the Old World, had not their unparalleled success in every branch of commercial art engendered the conviction that the genius developed by the institutions of the New World were quite as favorable to excellence in yacht as ship building.

The yacht squadron of Europe, whose owners are the representatives of hereditary knowledge, viewed with a kind of contemptuous complacency the humble pretensions of an American ship builder at yacht building. The sequel, however, afforded abundant proof that knowledge is not commensurate with wealth, nor experience with age, and that not a few of the yachts, as well as other vessels of the Old World, have been, and are now propelled with the wrong end foremost.

The preaching of Paul at Ephesus scarcely produced a greater sensation among the idolatrous Ephesians, than did the Yacht America among the sporting circles of the Old World. American ship builders have ventured to look beyond the battlements of war for perfected models in the messengers of peace; nor has their vision been confined to the studio of the philosopher, who would bend the channels of commerce into his untried theory, and hinge the science of ship building on the solution of a single problem; much less are they willing to commit the interests of this important art in the United States to the dictation of the periodical press of England, even though it be mantled with the guise of mechanism. And although the ship builders of the United States may have been deemed refractory by the philosophers of the Old World, yet we trust that it will be regarded as a sufficient apology, (when told that the United States are young as a nation, and, consequently, her experience must of necessity be limited), that their vessels, whether sailing or steaming, have no superiors, and that it would perhaps be quite as well to continue the consultation of the same chart which has pointed unmistakably to the channel of success, and which to them, and to the mechanical world, is sufficiently legible, although it may not seem quite clear to a small portion of the transatlantic press. They, however, have had a sufficient amount of experience and research to enable them to discover that the man who knows so little of the practical operations of a ship yard, as to be unable to tell how many sixteenths of an inch are contained in one foot of an ordinary mechanic's twelve-inch rule, has gone beyond his depth when he undertakes a crusade against American ship builders. We are frank to admit that they have not followed the metaphysical abstractions of their ancestors, and that they are unwilling to endorse the adage, which teaches that Britannia rules the waves; and however little they may know of the theories of ancient or modern philosopers, or even of the researches of the renowned hero of a London Mechanical Magazine, they know that no sophistry can make that right which common sense pronounces wrong; and they have learned still more, that the best theory is that which is proved by practice, and can point to their ships as the best evidence they are able to furnish the world, that their theory and practice agree to demonstrate the correctness of their works on Marine and Naval Architecture; and that the principles upon which their practice is based, will live when the invective gall of an editor, or the fury of their jealous neighors has passed away—'Time's boundary sundered, and commercial operations come to an end.'

Experiments have been, and still are, regarded in Europe as the best means for materially improving this ennobling art; but of what avail has the many experiments in submerged blocks of various forms been to the marine of England, France, or other parts of Europe? Their vessels furnish the clearest exposition, which requires no comment from us. Experiments are valuable in maritime pursuits; but let their management be given to practical men, and let the subject be the vessel itself, (as in this country); every ship that is built by a new model is an experiment, and surely Americans should be the last people to disclaim experiments; but let them combine both theoretical and practical knowledge, and there is little hazard in ensuring success.

The Yacht America was an experiment, and during the progress of her construction, was regarded as a failure by not a few of those who cannot look into nature's laws of utility for themselves—who can only see what some one before them has seen. Among the very few practical ship builders of the United States (the weight of whose judgment was no longer a problem for solution), none was to be found who rejected the principles involved in her construction. The experiment consisted chiefly in the more acute angle of her line of flotation on the anterior part, consequent in part upon having located the greatest transverse section further aft than on other vessels of similar model. The wave line principle, carried out in the construction of the America, had been successfully adopted in some of the pilot boats of our coast with abundant success. The Mary Taylor and the Moses H. Grinnel are very similar in form to the America, and we have but little doubt but that the latter would have been quite a match for the best sailing vessel in the yacht squadron of Europe, had she been sent on such a mission; and unless the yacht builders of the Old World are prepared by their recent defeat for greater improvements in the speed of their vessels, it will not again be deemed necessary to build a vessel expressly for comparing the speed of the Western World with that of Europe. But superior speed is not the only quality furnished in the models referred to; the vessels thus built are stronger, more comfortable, and, as a consequence, render life more secure; the resistance on the bow of the vessel (upon which the water is not heaped up) serves to hold her together; thus we find that where resistance is diminished, strength is increased; but this is not all: the vessel is steadier, the pressure being brought to bear on the sides of the vessel, instead of on her ends, serves to increase her practical stability, which is an item worthy of consideration."

Culture of the Olive.

The Patent Office Report contains the following letter from L. W. Tinelli, Esq., United States Consul at Oporto, which will be of interest to our readers:—

"In a recent excursion to the Algarves, where orange trees are more cultivated than in these northern provinces, I had occasion to notice a remedy used by the farmers there to cure the trees affected by the Ferrugen, or to prevent its attack.

They wash the tree all around for the length of a foot, with a mixture of lime, potash, and oil or soap. I was assured that this simple preventive had greatly diminished the destruction caused by this insect.

Thinking this information might be of some service to you, I take the liberty of communicating it without loss of time. I would also respectfully call your attention to the cultivation of the olive in Florida, and in most of the Southern States. Formerly the olive, on account of its slow growth, was not considered very useful; but some years since a new variety was introduced into France, and into some parts of Spain and Portugal, which yields an abundant crop of fruit the second year after planting. They are small trees, or rather shrubs, about four or five feet high. The fruit is larger than the common olive, is of a fine green color, even when ripe, and I am informed, contains a great deal of oil! The advantages accruing from this new mode of cultivating the olive tree are beyond all calculation. By the old method, the olive tree does not attain its full growth and consequently does not yield any considerable crop, under thirty years; whereas the new system of cultivating dwarf trees, especially from cuttings, afford very abundant crops in two or three years. An acre of land can easily grow 2,500 trees of the new variety, and the gathering of the fruit is easy, as it can be done by small children.

I am proud of being one of the first to introduce into the United States the culture of silk, which would certainly be more advanced if the frantic speculation in morus multicaulis had not spoiled the business and deluded many good farmers.

As the cultivation of the olive does not require the least practical knowledge, and as every one in the States understands the process of making oil, I would be most happy to forward, by all means in my power, whatever your patriotic views might suggest on the subject. I should think that good olive bushes, well rooted, and good with heads, might be had here at from 18 to 22 cents each."

[It is our opinion that the olive can be cultivated in the United States; a fair trial, at least, should be made, for the olive is one of most useful fruits in the world. Olive oil makes the finest of all soaps, when made with pearl ash. The oil is beautiful for table use, and it is also healthy. We know precious little about pure olive oil here. There are thousands who believe they partake regularly of pure olive oil, that have never seen a drop of it. Olive oil is most excellent for lubricating machinery, and it is very extensively used by dyers of fine colors, to animalize, as it is termed, cotton so as to make it take on beautiful and rich madder and alkanet root colors. The culture of the olive would be of immense benefit to the United States, and we are positive that it can be cultivated here as well as in Greece or Portugal.

Parker and Re-Action Water Wheels.

Messrs. Editors—I have a circular in my possession, stating that all persons making, vending, or using any re-action water-wheel, infringe on the patent of Z. & A. Parker, of Ohio. There were four agents in Vermont, last year, collecting heavy fines of all who were using any kind of re-action water wheels—giving only four days' notice, and threatening that, if not paid within that time, they would attach property to the amount of five thousand dollars wherever they could find it. The amount of fines collected in one county, in that State, was two thousand dollars. I understand that they are going to commence with this State next spring; there is a large number of Calvin Wing's Spiral Vent Water Wheels (patented Oct. 1st, 1830) in use in this State, and a patent fee has been paid to him or his agents for them. Now, I wish to know if Parker or his agents can collect another fee on this or other re-action wheels. In No. 32, Vol. 6, of the Scientific American, it says that Parker's patent has run out. I wish you to inform me if mill owners and others will have to settle with these men on their own terms. C. Goodnow.

East Sullivan, N. H., 1852.

[To our correspondent, and others in New Hampshire, we say, that if a person were to call upon us in the same way that these men are stated to have done to people in Vermont, we should apply to the nearest magistrate to have him taken up for obtaining money by false pretences. No patentee can attach the property of any man. The Patent Law provides [see sec. 15, Act 1836] that, in any action brought by a patentee for infringement of a patent, the defendant is permitted to plead the general issue. Those agents spoken of by our correspondent, whoever they may be, are acting in a manner to prejudice the whole community against patents; and they are acting to deceive men who are not acquainted with the patent laws, so as to frighten them into the payment of taxes they may not owe. We believe these men can be prosecuted for acting as they are represented to have done. We warn the people of New Hampshire to remember the adage, "not one cent for tribute."

It is well known that we are deadly hostile to patent pirates—those men who rob inventors of their inventions; and perhaps Mr. Parker has been often wronged by such men,—we feel for him in such cases, but it is very evident that people like our correspondent, are not patent pirates; if they are using the wheel of Parker's expired patent, they have been imposed upon—innocently perhaps, by some other person, and it is wicked to work upon their fears in order to make them pay a tribute, when the law provides how this shall be done, viz., by a jury trial of their peers. We advocate justice to all inventors, patentees, and the people.

Transporting Timber,

Your correspondent, M. M. M., of East Dorset, Vt., is greatly mistaken in supposing the contrivance he mentions, for conveying timber from the Green Mountains to a lower level, to be "a new form of overcoming resistance." The same thing precisely, only on a more magnificent scale, excited great interest throughout Europe in 1815–16.

This famous slide was built and used for transporting the vast forests of pine and fir that grew on Mount Pilatus, Switzerland, to the Lake of Lucerne, by a native of Wirtemberg; it was composed of some 30,000 large pine trees, squared by the axe, and formed into a trough six feet wide and from three to six feet deep. In the bottom was a groove for the reception of a small stream of water, let in over the side of the trough; to diminish the friction; it was carried along the faces of the most rocky eminences; sometimes it went under ground, and again it crossed the deepest ravines, supported by scaffolding 120 feet high. M. Rupp, the projector, was frequently obliged to descend the steepest precipices, suspended by ropes, at the imminent hazard of his life; and the skill and ingenuity he displayed in surmounting the difficulties of this vast undertaking, gained him a just tribute of admiration. A telegraphic communication was established between the two extremities of the slide, which was nine miles in length, and the trees, having been stripped of their bark and limbs, and introduced into the trough, performed the journey in six minutes, and some of the largest in three minutes. The velocity of the descent caused such an accumulation of force as to occasion several trees, which sprung from the slide, to penetrate into the earth by their thickest ends, to the depth of eighteen to twenty-four feet; and, in one instance, one of them coming in contact with another, cleft it from top to bottom with the violence and rapidity of lightning. (See Playfair's works, Vol. 1, Appendix No. 2, p. 89). Verily there is nothing new under the sun. Chas. S. Watts.

South Boston, March 8, 1852.

[The idea was new, no doubt, to Mr. Cochrane, the gentleman referred to on page 200. The plan of his trough, also, was different from that of Mr. Rupp—Cochrane's being made out of boards, forming a tunnel, the water being employed to float the timber. Mr. Rupp's plan was a slide to carry the timber, like an inclined plane—a plan frequently pursued on the sides of the Norwegian pine hills. Cochrane's plan is much the cheapest, but not so suitable as Rupp's for transporting heavy trees down very steep declivities.—[Ed.

To Stop Bleeding from the Cavity of an Extracted Tooth.

Noticing the case of Mrs. Locke, who bled to death in consequence of the extraction of a tooth, Dr. Addington, of Richmond, Va., says he never fails to stop the bleeding by packing the alvelous from which the blood continues to trickle, fully and firmly with cotton moistened in a strong solution of alum and water. He cured a brother physician in this way, whose jaw had bled for two weeks.

This is truly a very simple remedy, and from the nature of alum—its astringent quality, we should judge it to be a very effectual one.

Copper Tube Manufactory.

At Somerville, says the Lowell Vox Populi, a large factory has been built for manufacturing copper tubes. It is the only one in this country, and is not likely to be troubled with competition, for it is said that there is only one man in the United States who knows the whole trade. He is an Englishman. The other workmen at this factory are allowed to learn only half the trade, the work being carried on in separate buildings.

© 1852 SCIENTIFIC AMERICAN, INC

NEW INVENTIONS.

Improvements in Spinning.

Mr. Wanton Rouse, of Taunton, Bristol Co., Mass., the patentee of some valuable improvements in machinery for spinning cotton, has taken measures to secure another patent for useful improvements on the "self-acting spinning mule." The improvements of Mr. Rouse are designed to simplify the construction of the mule, in relation to governing the revolution of the spindles in laying the thread on the cops, and in backing off, preparatory to the said laying on, by a cam barrel having an irregularly formed periphery, both in its length and circumference. The cam is made to give motion to the spindles, by means of a finger which bears continually on its periphery, and which is attached to a swinging frame, furnished with toothed segments that gear with toothed wheels upon a shaft, which, through a train of gearing, drives the spindles. The cam is made to revolve at the time the backing off should be performed, and also during the time the mule is running up to the beam, when the winding of the thread on the spindle is to be performed. Its periphery is of such a form, circumferentially, that the finger will be running towards the axis at the proper time for backing off, and from the axis at the proper time for laying on. Thus, by causing the segments to move in opposite directions, it drives the spindles in opposite directions. The cam is of such a form on that part where the finger bears during the running of the carriage, as to drive the spindles with a constant accelerated motion, which is necessary, owing to the decreasing diameter of the cop towards the top, where the laying on of the thread finishes; its circumferential form varies at different parts of its length, which gives it the longitudinal irregularity of form spoken of before; this is to suit the degree of speed, and the amount of back-off, at different stages of the building of the cop, the form of which is a constantly changing one, from the commencement to the termination of laying on the last inch of thread. The finger spoken of having a slow movement from end to end of the cam, it gives a changing movement to the segments, and consequently to the spindles of the cops. There are some other minor improvements connected with the working of this cop-making cam. It is well known that the self-acting spinning mule is a complicated machine, and does not produce such good work as the carriage worked by hand. The improvements of Mr. Rouse greatly simplifies the construction of the mule by reducing the number of parts, and substituting other mechanical devices, which makes a better thread and also builds a better cop.

Improved Furnace for Warming Dwellings.

Dr. Stephen Gates, of Albion, Orleans Co., N. Y., has taken measures to secure a patent for a furnace, the improvement on which consists in having a series of flues or tubes directly over the fire chamber and leading therefrom into a smoke chamber, which communicates with the smoke pipe; the flues and fire chamber are enclosed within a case into which cold air is admitted through a pipe—the outer end of said pipe communicating with the open air on the outside of the building; the cold air is made to pass between the flues or pipes by means of deflecting plates, which thoroughly heat it, and it is then conveyed through necessary pipes to the apartments to be warmed.

Improved Knife for Cutting Hay.

Mr. John F. Holden, of Genoa, Cayuga Co., N. Y., writes us that he has seen a very good knife used, this winter, for cutting hay in the stack or hay-mow. It has a long handle, like a pitchfork, and near the foot it has a jog or short arm which has a shank for a knife of a crescent formed edge. The foot is placed upon the jog or arm, to work the knife, and the handle answers for a lever. The improvement is a good one, and one much required, as we have often felt in days of youth, long ago.

Another Great Rifle.

We see it stated in a number of our exchanges, that Mr. Porter, of Nashville, Tennessee, has recently invented a repeating rifle which will take all the others down in short order, it seems. It is self-loading, and contains a magazine of sixty charges; all that has to be done is to put the charges into the cylinder or magazine and pull away at the trigger—that is all, until the whole are discharged.

Steam Fire Engine.

A number of our cotemporaries have noticed a fire engine worked by steam, which was recently tried at Cincinnati. It is said that the steam was raised in four minutes, and it threw a stream 130 feet through a 3-4 inch nozzle. A steam fire-engine is nothing new at all. One was tried in this city a number of years ago. It was built by Mr. Ericsson, and is illustrated in Ewbank's Hydraulics,

CONGER'S TURBINE.

Figure 1.

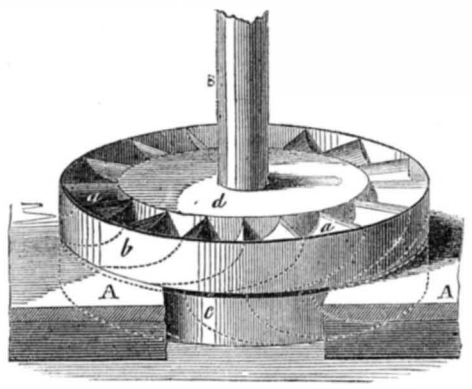
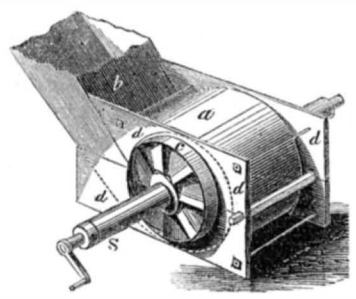


Figure 2.



As there is a great deal said about water wheels at present, owing to the excitement in some places, about Parker's Wheel, we present the accompanying engraving of the improved Water Wheel of Mr. J. B. Conger, of Jackson, Tenn., which was patented July 10th, 1847, the patent for which has something more than nine years years yet to run. Fig. 1 is a perspective view of the wheel, with the guides, rim, and centre of a wheel 6½ feet diameter, having 16 stationary guides placed on the edge of a circular space in the floor directly over the wheel, into which they direct the water. Fig. 2 is a perspective view of the wheel, guide, and scroll, as applied to a saw mill with a small fall of water. Fig. 3 is a vertical section of the same, and fig. 4 is a horizontal section of it. Fig. 5 is a diagram, showing the curve and position of the guides of the wheel, fig. 1. The accompanying description refers to the figures, particularizing the same by the letters of reference.

In fig. 1, *c* is the turbine wheel; it is precisely similar to the one above it, except in the guides which are placed in a reversed position, as shown in the diagram, fig. 5; S is the shaft of the wheel; it passes through the centre of the guides. A A is part of the floor of the pen-stock that surrounds the wheel, into which the water is admitted, and where it stands with its whole head above the wheel. The wheel, however, for convenience, may be placed more near the level of water, by having an air-tight vessel to conduct the water below the lower level, and this will not affect the operation of the wheel. This principle is well known in the United States, and has been practiced for some twenty years, although it is spoken of in a recent French work, in describing a wheel, as being something new and a French invention.

Figure 3.

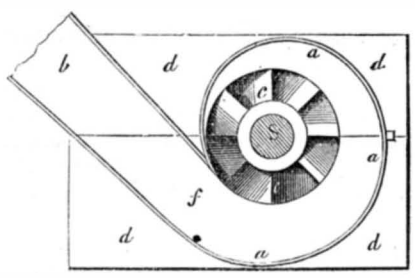
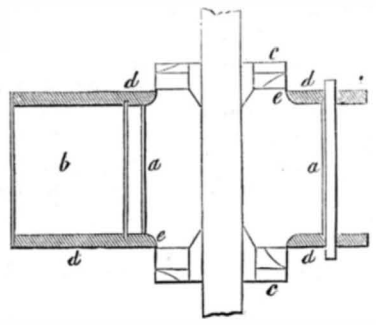
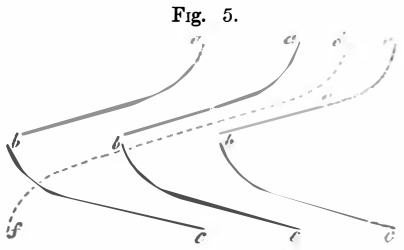


Figure 4.



In the diagram, *a b*, *a b*, *a b*, show the curve and position of the guides of the wheel, and *b c*, *b c*, *b c* that of the buckets of the wheel. The curve of both guides and buckets is similar; from *a* to *e* (fig. 1) is part of a cycloid, *e* being the vertex and *a* the cusp; *c* and *b* are tangential to the vertex, *e* (small letters in the middle dark line, fig. 1). The top and bottom, and all the horizontal sections of the guides and buckets, are radial to the wheel. The dotted line, *d f*, in the diagram, shows the direction or path of a molecule of water in its passage through a guide, and a bucket of the wheel. Its downward velocity is equal throughout its whole descent from *d* to *f*.

Fig. 5.



The water enters the turbine without shock, as nearly in the direction of its rotation as it is possible for it to do, and leaves it at *e*, in as near an opposite one, without velocity, except a downward motion, sufficient to give place to the succeeding water. With any other form of guides or buckets, it is not possible to make the water enter the turbine as near in the direction of its rotation, and to leave it in the opposite one, with as little velocity; for, if the bottom part, *b e*, has any curve at all, the direction of the influent and affluent water will form a greater angle with the plane of rotation. The loss of effect sustained by this indirect action of the water on the turbine, will be as the difference of the cosine of this angle and radius. The principle claim of Mr. Conger's patent is for the form of the guides and buckets. A wheel formed with the buckets or guides having the bottom part plain, is claimed to be an infringement of this patent. A more full description of this action of the water on this wheel was given in Nos. 50 and 51, Vol. 6, Scientific American.

In the figures, 2, 3, and 4, *a a* is the scroll which gives the water a whirling motion in the direction of the wheel's motion; *b* is the chute which admits the water into the scroll; *c* is the turbine wheels, two on a shaft, only one of which can be seen in figs. 2 and 3, but the section, fig. 4 (although in a reversed position), shows the two wheels. *d d*, *d d*, are the ends of the scroll; it is made of three or four inch planks, confined together with iron rods. There is a circle cut out of the planks equal in size to the inside of the rim of the wheel, as shown at *c*, fig. 3, and at *e e*, fig. 4; S is the shaft. The area of the cross section of the chute, at *f*, should be equal to that of all the issues of both wheels. The principle of action is the same in these turbines as the one (fig. 1) on the vertical shaft; the curve and position of the buckets is the same.

More information may be obtained by letter addressed to the patentee, at Jackson, Tenn.

Our friends of the Pittsburg Daily Dispatch will accept our thanks for their complimentary notices of the Scientific American. To the press generally we add our acknowledgments for friendly favors.

Improvement in Head and Tail Block.

Messrs. Editors—I observed, in your paper of Jan. 17, on page 140, a statement of C. F. Drake, of Xenia, Ohio, that a Mr. Snyder, of Fairfield, Ohio, has made the above-named improvement in saw mill setting blocks, which work admirably, and Mr. Drake has tested them for nearly a year. We have had setting blocks that do the same business, they are worked by a short lever, and set both ends of the log at the same time, with perfect accuracy, and to any desired thickness that the sawyer wishes. These blocks were invented by John E. Randall, of Ontario, Wayne Co., N. Y., and have been in successful operation for more than three years, and give perfect satisfaction; they dispense with the service of one man in most cases, and make better lumber than by the old method of dogging. The construction of the blocks is simple, permanent, and durable, and not liable to get out of order, with fair usage. The blocks can be afforded at two-thirds of the price of the other block, which cost $150, I think.

John W. Randall.

Ontario, N. Y.

The Telegraph Superseded.

The editor of the Boston Transcript has seen the model of an apparatus by which mails of any weight may be transported between two places, say Boston and New York, in 15 minutes. That paper remarks,—"We are not at liberty to say much upon the subject at present; but the experiments which we witnessed were of a character to inspire confidence in the success of the principle, applied even to a distance of 300 miles or more. The beauty of the contrivance is its perfect simplicity."

[Perhaps this is an old exploded invention revived—the exhausted air tube or the like.

London Steamboats Picking Up.

Eight new steamboats are now being built by a new company to run upon the river Thames and carry passengers. They are not to draw over 18 inches of water; they are to be long and of far greater room than the kind now in use on the Thames. They are to be richly fitted up like our American river boats, and are to be light, swift, beautiful and airy. One peculiarity about them is, no smoke pipe is to be used on deck. The smoke is to be drawn by a blower and discharged at the side of the boat under the paddle wheels.

Corns, Shoes, and Proper Measures.

If shoes were made of the shape of the human foot, there would be very few corns, but ladies like to cramp their toes in tight shoes to show a small foot. There are but few shoemakers, either, who seem to understand the anatomical structure of the foot, and the nature of its action; they make boots and shoes upon the same principle as carpenters make boxes. No wonder one boot or shoe is easier than another, and that one inclines to the one side and another to an opposite one. To cut the leather properly for a good fitting shoe or boot, a measure like that of McGinnes' Tailors' Measure, is wanted by it they would get the precise form of every foot, and thus cut their leather to their measure.

A High Bridge.

There is a bridge in the course of construction on the Buffalo and New York Railroad, where it crosses the Genesee River, near Portageville. When completed it will be 230 feet high, and 500 feet span; stone piers set on the bed of the rock, are carried up 30 feet high from the bed of the river, a few rods above the upper falls. From the top of the piers, the wood-work rises 200 feet, and so perfect is the model of the bridge, that it is thought there will not be the least tremor or motion under the heaviest train of cars that may ever have occasion to pass over it.

Discovery in Sculpture.

A number of persons have inquired of us what the discovery in sculpture, which has been attributed to Hiram Powers, and which has been so extensively noticed, "consists of." We cannot tell, perhaps some of his friends have overrated it.

© 1852 SCIENTIFIC AMERICAN, INC

Scientific American

NEW-YORK, MARCH 20, 1852.

The American Institute and Riddle's Fair.

In noticing the intended Exhibition, a few weeks ago, we remarked, "the American Institute may as well begin to groan;" it has began. At the late regular monthly meeting of the Institute, the subject of Riddle's Fair was brought up and it elicited a very warm discussion. Of course the Fair was denounced, and no wonder, for shrewdly enough all the managers perceive, that with Riddle's Fair, in Reservoir Square, the walls of Castle Garden will look very bare, and the income of the Institute be very spare. The Institute is an incorporated Association, and is in debt to the handsome sum of $15,000. Mr. Nash inquired "how was this debt to be paid off if two Fairs (Riddle's and that of the Institute) were held in one such small place?" The inquiry was an exceedingly sensible one, "how will the debt be paid?" "I ask," says Mr. Nash, if the project will not be our annihilation, for the American Institute cannot compete with a society which has a million of dollars at its back?" Col. Hoe stated that the plan of the Crystal Palace was copied from the iron houses of Mr. Bogardus; and Mr. Ebbetts said he well knew that Paxton took the plan from him. Well, it is our opinion that men of respectability should be very cautious how they speak about such things, for we are positive that none of them can adduce proof for these statements. It does not take a leaf of laurel from the brow of Mr. Bogardus, to give Joseph Paxton all the credit of designing the Crystal Palace.

The Bill to incorporate the Riddle's Fair, as an Association, passed the Senate of this State on the 10th inst.; it was opposed by the American Institute, but the opposition met with no respect whatever: its influence might have been weighed down by a feather. The Bill, we hope, will not finally pass, and yet what is to prevent it? Nothing that we know of. The American Institute deserves to be crowded to the wall, and its whole stock of mismanaging managers put up to the highest bidder, for while such an Institute might be an honor to our country—a centre of attraction to men of science, mechanics, and artists, it resembles only a dull school room. Look at the Paris Academy of Sciences; look at the Royal Society of London; look at the subjects discussed there. Does the American Institute reflect any honor on our country, as it might do with proper management like these Institutions? No, it does not. We regret this, for we wish it well—not for what it has not done, but for what it might do. We certainly want an Institution in New York like the Paris Academy of Science.

Riddle's Fair, we hear, is to be a joint-stock concern, and some of our wealthy merchants, it has been asserted, have become stockholders. It is not to be a World's Fair; it is to be a Big Show for selling the cast-off articles of the London World's Fair, at the best prices that can be got for them. Just show some men how to make money, and scruples of an honorable conscience are left to take care of themselves till the holidays are over. A pair of bellows, once belonging to Nell Gwynne, were keenly contended for by two noblemen at an auction. There is no accounting for tastes, sometimes, but we can always account for interests, and the man who would speculate in the cast-off robes of some notorious individual, either for a raree-show, or as an article of traffic, may be shrewd enough in his day and generation, but we question his sense of honor.

That the Riddle Fair will prove injurious to that of the American Institute, and a number of other local Fairs, we have not the least doubt,—but it is not yet opened, and it is our opinion that it will be a losing concern to its stockholders.

An Invention Wanted—Chance for Electric Engineers.

The Paris Moniteur offers a prize of 50,000 francs for a discovery that shall render the voltaic pile applicable, with economy to industry, as a source of heat—to lighting, chemistry, mechanics, or medical practice. All nations are admitted to compete during five years.

Here is an opportunity offered, and a prize to back it, for Mr. Paine only to fulfill what he has promised he could do, did do, and would do. The improvement belongs to the field of electro-chemistry, and is the only source of hope for the economic application of electro magnetism as a motive power.

Preserved Meats and Meat Biscuit.

Every commercial nation is deeply interested in the question of good preserved meats for long voyages and journeys. The old way of putting them up was by boiling the meat, placing it in tin cannisters, expelling all the air, and then hermetically sealing them. This would be a very good plan, if it was a sure and certain way of keeping meat fresh. But there are great objections to this method. One is, that the meat may not be well prepared before it is put in the cannister, consequently it will soon spoil; another is, the air may not be fully purged from the meat, and then it will also soon spoil; another is, a cannister may not be hermetically sealed, or if it is, a slight bruise, from handling it, may cause it to leak, unseen, and in that case, also, the meat will soon spoil. But the greatest objection to this plan is the facility afforded for fraudulent dealing, by those who contract to supply naval stores. Every cannister cannot be examined, because it is sealed. The late stupendous frauds practised on the British naval commissariat, whereby a million dollars worth of garbage was sold as preserved meats, should direct attention to a better plan of preserving meats, so as to insure a perfect inspection of every cannister, thereby obviating the liability of defrauding the buyer. The process of preserving meats, patented by Mr. Gail Borden, Jr., formerly of Texas, but now of this city, named the "Meat Biscuit," is destined, we believe, to be a great blessing to sailors, and all persons who undertake long voyages and journeys. The Governor of Bermuda, Hon. C. Elliot, has had some of this "Meat Biscuit" tried by Dr. Hall, Medical Superintendent of convicts in that Island, and it has been highly approved by him. Dr. Hall says "it has many advantages over preserved meats and soups; a whole cannister, either of meats or soups, requires to be used up at once after being opened, in warm climates, or it soon putrifies; it is not so with the 'Meat Biscuit.'" Dr. Hall has made many voyages to New South Wales from England, and no man in the world is a better judge than him; he also says "a cannister has been opened more than six months, and yet the article seems unaltered." He says he is using the biscuit daily, in lieu of beef-tea, for several of the sick. We would respectfully call the attention of the British Government to this fact—this irreproachable, high, and disinterested testimony to the value of the "Meat Biscuit." We do this at present, because this subject has been brought up in Parliament, recently, by one of the most astounding frauds, of garbage preserved meats, ever perpetrated on any government since the world began.

It is not very generally known that thousands of barrels of beef are packed every year, in the United States, for the Commissioners of the British Navy. They always require the best of meat; and who deserve it better, or require it more, than sailors? The United States could supply any quantity of the "meat biscuit;" it would be made of the best beef—none of the Goldner garbage—and every cannister can be inspected, so that no fraud could be perpetrated, and assuredly none would.

We would also call the attention of our own Naval Department to the "Meat Biscuit," for its real worth is not generally appreciated at home or abroad. Every pound of it contains eight pounds of good concentrated beef—muscle-producing substance; it makes excellent soup, and good fresh mince pies may be made with it every day. Dr. Lindley, F. R. S., Prof. of Botany in University College, London, in his lecture on the Alimentary Substances of the Great Exhibition, says of the "Meat Biscuit," for which a Gold Council Medal was awarded, "it is light, portable, and very nutritious. A specimen, placed in the hands of Dr Lyon Playfair, was analyzed by him, and found to contain 32 per cent. of flesh-forming principle. I am justified in looking upon it as one of the most important substances which this Exhibition has brought to our knowledge."

We would state here, that it takes a few trials to make the meat biscuit suitable to our common tastes, but this is owing to notions as much as any thing else. Col. Sumner, U. S. Dragoons, has used it, and nothing else, for days, in Texas, and four ounces were sufficient for his daily sustenance, keeping him healthy and strong. We hail the "Meat Biscuit" of Mr. Borden as one of the most useful discoveries of the present day, and we are confident that the Naval Departments of our own country and Britain, would find it to be one of the greatest of blessings ever conferred upon sailors, if they would only use it. Give it a fair trial, gentlemen of the Ocean Wave, and after the first voyage made with it, you will never be without it.

Views Respecting the Source of Light.

James Nasmyth, F. R. A. S., inventor of the Steam Hammer, an astronomer of no mean fame, and a man of splendid abilities, has recently published an article in the Edinburgh Philosophical Journal, explaining some of his views on the "Source of Light," which are both novel and interesting. He states that he has examined, for a number of years, the remarkable features which, from time to time, occur on the sun's surface, and whatever the nature of solar light may be, the "source of it appears to result from an action induced on the exterior surface of the solar sphere." Impressed with this view he was led to conclude that the true source of the latent element of light resided not in the sun but in space itself, and that the sun's duty is to act as an agent for the bringing forth into vivid existence its due portion of the luminous element, which, he supposes, is diffused throughout the boundless regions of space, and is perfectly inexhaustible. Reasoning upon this basis, he concludes that the element of light may not be equally diffused throughout the regions of space, and if this is so, it is easy to account for the glacial period, which as Geologists say, once existed on this earth, and which they account for, by boulders in Long Island, drift grooves in rocks, where no icebegs are now seen, nor glaciers either. He says that there perhaps was a time when our sun in its course through the stellar universe, passed through a region of space, where the light-yielding element was deficient, and in which case his brilliancy would have suffered awhile, and an arctic climate in consequence spread from the poles towards the equator of our earth; the glacial handwriting on the walls of our mountains and ravines, he asserts, is unquestionable evidence of this. He believes that his idea of this source of light, agrees with the Mosaic account of the creation.

Substitute for Pen and Ink.

We have received from Mr. J. F. Mascher an indelible lead pencil: its marks cannot be rubbed out with india rubber after it is left on the paper for a short time; but it only makes a pale lead mark, and is nothing like the clear dark defined marks made with ink, nor the beautiful jet black of manifold writers, made with prepared paper. A pencil that will write as free as the common lead pencil, and make beautiful black and permanent impressions like the manifold writing paper, is a desideratum. He who invents such a pencil first, his fortune is safe; who will be the lucky man?

It will be seen that we are not yet at the end of invention. There are rewards offered by the French for inventions in Electricity; Mr. Ray has offered prizes for improvements connected with railroads, and there is a wide field for other improvements; and here let us say, that although some, at first sight, may deem a substitute for pen and ink a small invention, we say, it is no such a thing; it is more important than the one for which the French offer their reward. Let us take into consideration the great amount of writing that is performed every day; look at the letters, books, &c., which engage so much labor every day, in all parts of the world; think of the barrels of ink that are consumed every day, even in New York City; think of the number of times the hand of one quick pensman must travel from the sheet of paper to the ink-bottle, every day; and multiply the said number of times by the number of pensmen employed, and we shall find that an incalculable amount of time is lost by the mere dipping of thousands of pens, thousands of times, hourly, into dirty ink bottles.

When imagination revels for a moment on the blessings that would be conferred upon the scribbling community, by the invention of a jet-black indelible pencil, we cannot help exclaiming, "come, bright improvement, on the car of Time."

The Woodworth Patent—Petitions Against it.

No less than forty petitions, from different parts of our country, were presented against the extension of the Woodworth patent, in Congress, on Monday last week. Desperate efforts have been and are now being made to get the extension. Here is what the Washington correspondent of the New York Daily Times says about these efforts:—

"Very great exertions are now making to procure another extension of the patent for the Woodworth planing machine. In fact, the patent business never was so active in Congress as now. A powerful corps of lobby men are at work for this machine and many others, and if the assignees of the patent do not succeed in their efforts, it may be considered that the influence of the outsiders has become very insignificant. Monopolies are taxes more oppressive than any others existing under our form of government, and no monopoly ought to be allowed to exist one moment after the author of the improvement for which the patent is given has been compensated for his ingenuity, and the benefit he may have conferred upon the country."

Croton Metallic Paint.

A sample of "Mead & Fullmer's Croton Metallic Paint" has been exhibited to us, and we are convinced that it is a most excellent article, exceedingly useful, and superior to many paints for a great number of purposes. It derives its name from having been discovered in the neighborhood of Croton, N. Y., and is therefore a natural deposit; it is of a rich maroon color, and is principally composed of the peroxyde of iron, a proportion of alumina and silica, which makes it exceedingly valuable for covering all works exposed to the weather. It is excellent for painting iron railings, boilers, and all iron work exposed to moisture. We are glad to know that such a material for paint has been found so near this city. It is cheaper than white lead and many other paints in use; it works free with oil, and has a most beautiful surface. This beautiful paint is sold by Mr. Walter H. Mead, No. 19 Eighth avenue, this city.

Things to be Invented.

Coal Driller.—Recent discoveries prove that anthracite coal veins should be worked by perpendicular shafts when below the water level, instead of by inclined shafts, usually called "slopes." The slope is made by running down the coal vein all the way from the surface. The shaft requires to be drawn from four to six hundred feet deep, through the solid rocks that over-lie the coal, and its area is about 12 by 18 feet. To accomplish this by the usual methods, would involve an impracticable expense; and what is wanted is a steam drill to work, say twelve five-inch augers at once. A fortune will be the sure reward to him who can do this, and plenty of contracts can be had in the Schuylkill coal field immediately, the money being advanced by the colliers. Something of the kind is used at Pittsburg, to drill five-inch holes to considerable depths, for ventilating the coal mines there, but in the Schuylkill region nothing is known of the improvement.

Anthony.

Maryland Mechanics' Institute.

We have received a copy of the Report of the Committee of the Exhibition of the Maryland Institute, which exhibition was held in Baltimore in October, last year. The Report is an able one in every respect. It would be well if the Managers of the American Institute would take a lesson from this Report, and follow suit. The Maryland Institute is a credit to the Republic, and deserves the praise of all our people.

© 1852 SCIENTIFIC AMERICAN, INC

Reported Officially for the Scientific American

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING MARCH 9, 1852

FLOUR BOLTS.—By Sam. Cook, of Adams' Basin, N. Y.: I claim, in combination with a series of graduated stationary bolting discs, in separate chambers, the rotating brushes placed above said discs, and the sweeps in a chamber below them, for the purpose of separating the bran, first and second middlings, and the flour, and conveying the meal, &c., through the machine, and for avoiding the use of a bran duster, the whole being arranged in the manner set forth.

WATER GAUGE OF BOILERS, etc.—By Benj. Crawford, of Allegheny City, Pa.: I claim the arrangement of the glass index tube, below the point at which the float chamber is connected with the water in the boiler—the water tube connecting with the boiler at some distance from the bottom of the latter, so that it is not liable to become obstructed, which renders the indication of the float certain, while the coolness and quietness of the water in the index tube leaves it transparent, so that the index can be seen clearly and conspicuously.

CORN SHELLERS—By Wm. Linsley, of the Township of Waddam, Ill.: I claim the combination of stationary sectional springshelling plates, with a rotating sectional spring shelling disc, substantially in the manner set forth, the plates and discs having a wabbling or universal motion, caused by the constant varying of the space between them, to accommodate itself, at the same time, to ears of varying size and shape, by which means the cobs are less broken and more thoroughly stripped, than in machines as heretofore constructed, for shelling corn, fed into them promiscuously and in mass.

CANAL LOCK GATES—By Chas. Neer, of Troy, N. Y.: I claim, first, the opening of the lower gates of a canal or river lock, outwards, or down stream, in combination with the means described, or their equivalents, for operating them, for the double purpose of saving length in the lock chamber, with the same walls, and for allowing the gates to be opened before the chamber is entirely empty, so that the escaping water may carry out with it the boat, raft, or other thing, being passed through, with the least possible delay.

Second, I claim the stationary gate at the head of the lock, which forms, with the breast wall of the lock, with the top of which it is level, a recess or chamber, through which the lock chamber may be filled at any desired height above the bottom of the lock, and thus save length of lock wall.

Third, I claim, in combination with the stationary gate, the sinking head gate, extending across the lock and reaching down a little below the top of the stationary gate, when the gate is shut, and which sinks or slides into the recess formed, in part, by said stationary gate, and is on a level therewith, when open, for passing boats, &c., for the purpose of saving in the length of the lock chamber, an amount nearly equal to the width of the gate.

Fourth, I claim the so placing of an adjustable bottom, or water strip, on the bottom of a lock, as that it may be operated upon by the pressure of the water within the lock chamber, and be forced up against the gate, when prevented from being closed tight, by an intervening substance, substantially as set forth.

SEED PLANTERS—By Ira Reynolds, of Republic, Ohio:—I claim the peculiarly formed curved lips or feeders and longitudinal grooves or channels, so constructed and tightly fitted to the cast box as to prevent any grain from passing into the chamber, except what is forced through the grooves by the lips, or feeders, as set forth.

HAY RAKES—By Jay S. Sturges, of Litchfield, O.: I claim, first, the arms projecting from the axle, in combination with the joint, for the purpose of adjusting the position of the teeth to the surface of rough or smooth land.

Second, hanging the arms to the axle, by means of the standard and connecting rod, and also raising and lowering the arms, as the teeth may require, by means of the pin and holes in the connecting rod and arms.

MELODEONS—By A. L. Swan, of Cherry Valley, N. Y.: I claim, first, constructing the air-receiving box of a melodeon, or other keyed wind instrument of a similar nature, which is operated by an exhausting bellows or pump, with a vibrating or movable top connected to it by wings or joints, which fold or bend, substantially as described, towards the external air which acts upon them, whereby the external air, acting upon the said wings, counteracts the inequality of the force exerted by the spring placed inside, to open or expand and enlarge the interior capacity of the box.

Second, the manner of hanging the treadle for operating the bellows, upon the two vibrating rods attached to the floor, or to any object under the instrument, substantially as set forth.

[This is an excellent improvement on these instruments.]

IRON FENCES—By J. B. Wickersham, of New York City: I claim so constructing the loops and mortices in the rails and posts of iron fences, as that, when in place, neither of them can be removed, using for this purpose single posts and rails, and neither bolts, wedges, keys, or any other fastening, except what is afforded by the peculiar shape of the said loops and mortices; and this I claim, whether the same be constructed as described, or by any other means essentially the same.

PLOW—By Joshua Woodward, of Haverhill, N. H.: I claim the plate constructed, arranged, and combined with the plow, substantially in the manner set forth.

DOOR KNOBS—By Benj. Nott, of Bethlehem, N. Y.. (assignor to J. P. Pepper, of New York City); I claim, first, the application and use of a metal plug, to be entered into the socket and fitting it, the plug passing up from or through the bottom of the mould for the purpose of preventing the melted material from filling the socket during the pressing operations, and at the same time, facilitating the centering and adjustment of the socket.

Second, I claim the invention of and substitution in the place of pincers, and polishing rods, heretofore known, a polishing rod capable of polishing several knobs, simultaneously and by one operation, substantially as described.

RE-ISSUES.

DRESSING STAVES—By Isaac Judson, of New Haven, Ct.: patented originally May 1, 1847: I claim, first, the arrangement of the wheel and ring of cutters, for the purposes and in the manner substantially as described.

Second, the holding of the stave firmly in position to be dressed, in the immediate vicinity of that portion which is being cut, while all the other portions are left at full liberty to assume whatever position its configuration may indicate, for the purposes and in the manner described.

Third, the employment of the two independent spring rollers, or their equivalent, acting with equal force upon each of the edges of the stave, irrespective of their relative thickness, in combination with the guides and the cutters, as described.

[See engraving of this machine in No. 41, Vol. 2, Sci. Am.]

MACHINES FOR PLANING, TONGUING, AND GROOVING—By Jos. Powell, Nelson Barlow & Edward Holden, of St. Louis, Mo., (assignors to Rob. Eunson, of New York City); originally patented Feb., 1847: I claim, first, the combination of two pairs of feeding rollers with the bed plate, and the rotating reducing wheel, substantially in the manner and for the purpose set forth, viz., the placing the axles of the first pair of feeding rollers, preceding the reducing cutter wheel and the axles of the second pair of feeding rollers immediately following the same, respectively, out of a vertical line with each other, thereby bringing the upper roller of each pair nearer to the shaft of the reducing wheel, than the lower one, for the purpose of springing the board or plank to the bed plate, as described.

Second, in making the rebates, by which the tongue is formed, I claim the employment of a series of incising cutters, in combination with stationary, planing, and tonguing cutters, the several cutters being so arranged as to act upon both sides of the angle of the rebate, simultaneously, or alternately, and cut the shaving from both the said sides, so as to form, at one operation, a tongue, both of whose sides and shoulders have been subjected to the action of cutting edges, substantially as set forth.

Third, in forming the groove, I claim the employment of a series of incising cutters, in combination with stationary, planing, grooving cutters, substantially as described, for forming the tongue, being arranged so as to cut upon both sides and the bottom of the groove, as set forth.

HOLLOW BRICKS, FIRE-PROOF BUILDINGS, &c.

Figure 1. Figure 2. Figure 3.

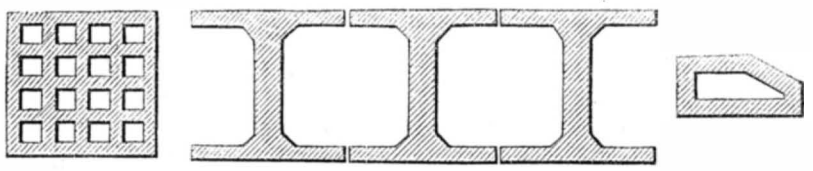
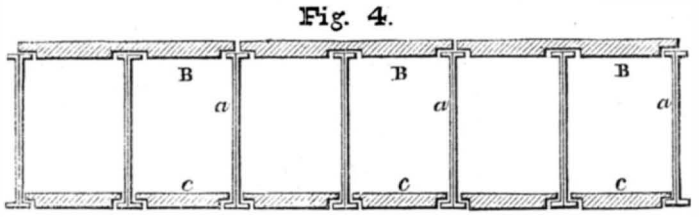


Fig. 4.



Having, during my visit at "The World's Fair," and since my return, paid much attention to the subjects heading this article,—and having, in company with Mr. F. B. Taylor, of this place invented machinery intended to effect great changes in the manufacture of bricks for building purposes, I propose to speak of the subject of hollow bricks,—tiles for roofs, floors, and ceilings, from fire clay, and of boiler plate for beams, girders, and rafters, introducing a few sketches to enable your readers to better understand the propositions I would make.

Those at all conversant with the subject of Hollow Bricks for dwellings, are well aware of the advantages claimed for that class of materials for the walls of buildings, but as the discussion has engrossed comparatively but little attention in this country, I will introduce a few instances of difference that are now being thoroughly investigated both in England and on the continent. The most important of these comparisons relate to health.

All persons occupying brick houses are aware of the great amount of dampness pervading the interior portion of the walls, during continued rainy weather, giving an unhealthy condition to the atmosphere of the rooms and an unpleasant sensation to all occupying them. Hollow bricks, properly constructed and built in walls, will and do completely obviate this difficulty, by interposing stratas of dry air, which is well known to be, when properly confined, the best non-conductor of moisture, heat, electricity, and sound, of all the substances used to form such barrier.

Another important advantage, in the use of hollow bricks, is, that they may be constructed of any desired dimensions to suit the thickness of walls, with full facilities of thoroughly burning them, thus saving two-thirds to three-fourths the mortar, and consequently much of the labor of preparing and distributing it, which will be found a large item in the account current of building.

A still further advantage is in carrying gas pipes, water pipes, and air to any part of the building.

Another advantage will consist in the diminished weight of the walls, and a consequent decrease of tendency so sink in the foundations. And still another in the saving of clay in the construction of bricks. Some who look over our immense beds of clay, in some localities, may think this a trifling matter, but others who know how high premiums are paid for some clay sections, will not look upon it as insignificant in relation to first cost, and when the labor of digging, mixing, grinding, and handling the clay, for 2,000,000 bricks, instead of 1,000,000, is considered, we shall find the difference, on a balance sheet, equal to a lucky day's labor in the California placers.

Having thus spoken of the advantages of the hollow over the common brick, I would say that two kinds of hollow brick with the machines for constructing them, were exhibited at the Great Fair, in London, known there as "the English" and "the French" bricks and brick machines. The machines were not particularly dissimilar in the manner of reaching their results, but there was a material difference in the form and quality of the brick, showing a decided advantage in the form of the French brick. I superintended several experiments in testing the strength of the two kinds, which showed that while the English brick was crushed at from four to five thousand pounds, the French brick resisted from seven to eight thousand pounds direct pressure. The surface area was nearly equal, but the French brick was of the greater depth, being about 5 by 6 inches cross section, and perforated in the direction of its length by square holes or interstices of about one inch area, with intervening bars forming and surrounding those holes about five-eighths of an inch, taking away nearly one half the clay. The English brick resembled more nearly the common brick, with an aperture, leaving a shell about seven-eighths of an inch thick. The great objections to these plans of making hollow brick are, the necessity of making them of very wet clay, subjecting them to great liability of being marred in handling, warping, and shrinking in drying and burning, and in proportion to the amount of moisture evaporated, they will be loose and porous, and have the tendency to re-absorb moisture.

It is to obviate these difficulties that Mr. Taylor and myself have entered the field of competition, and hope we have designed machinery, and invented and secured processes that will most effectually accomplish what we wish, and afford facilities for producing hollow bricks so cheaply, that every builder in our country, and in other countries, can be supplied. As soon as the necessary patents are secured abroad, we shall present those plans to the world through the medium of your paper, and abide the decision which science and experience shall award, not grudging if others shall seek better and more efficient ways in reaching a desired result.

I will merely say that we expect to make bricks twelve inches square, cross-section, by eighteen inches long (and as much larger and longer as builders like), with 16 apertures about 1 3-4 inches square, with the relative divisions and surrounding shell, and to make them so accurate, and square and smooth, that, with a proper ornamenting or glazing, they will need no other finish for inner walls than to be neatly pointed. We expect to make rapidly, when their bulk is considered, and to be able to set them in the kiln from the press, most compact in their texture, and subject to but slight shrinkage.

During a recent excursion in the southwest, I found that fire-clay was most abundantly distributed along the great and important channels, and we propose to convert that material, by patented and patentable processes, into tile for roofs, floors, ceilings, &c., it being a much stronger material than common clay, and may be manufactured into peculiarly formed brick for arches, having lightness and strength combined.

The accompanying diagrams will further explain what I have been describing. Fig. 1 exhibits an end view of the brick we propose to make; fig. 2 is an end view of the three arch brick; fig. 3 is a cross section of the English hollow brick; fig. 4 is an end view showing the plan of constructing and uniting floors together, viz., the boiler plate beams, and floor and ceiling tile.

a a a and *c* represent an end view of joists or beams of double boiler plate of any required thickness and width, with short flanges turned outward on each edge, making a broader bearing for the floor tiles, and forming hooks or bearings for sustaining the ceiling tiles.

B B B represent flooring tiles with recesses for one bearing in the centre and two recesses at the ends to keep all steady and firm. These may be made of any dimensions to suit the width of spaces between joists or girders, and of any thickness to suit the necessary weight the floor is intended to bear.

c c c represent ceiling tile, made with flanges to correspond with the flanges of the iron beam, so that when laid in its place it will come flush with the bottom of the beams, and if moulded rough, will form an excellent base for plaster. With these arrangements, buildings would become indestructible by fire, and rates of insurance go down so as to make it an advantage in a financial point of view, in addition to its other advantages.

We do not allude to the use of beams, girders, &c., of boiler-plate iron, as new,—much of the credit of that suggestion, and tests under it, belonging to Mr. William Remmies, of your city, but we do claim as new, and worthy of notice, the arrangement of the flanges and tile ceilings and floors, and believe public and private health and security will be promoted by the adoption of a more complete system of dry and fire-proof buildings.

JOSEPH E. HOLMES.

Fishkill Landing, March 2, 1852.

An interesting experiment, ordered by the Secretary of War, for the purpose of testing the relative merits of Onondaga and Turks Island salt, has been made here. The occasion of this experiment is, that there has existed a strong prejudice against salt of home manufacture; and for all orders for beef and pork for the use of the government it has been expressly stipulated that it should be packed in Turks Island salt. The experiment was the packing of eight hundred barrels of pork in the two varieties of salt, about two or three months since, which was unpacked and examined by competent judges, and the result is that the meats packed in the two kinds of salt were precisely the same, both being compact and of the same color.

There are two kinds of salt made at Syracuse, and the pork was packed in the pure, large crystal kind.

Remarkable Perfection of Instruments.

The chronometers used in the Grinnel Arctic expedition were subjected to the severest tests, yet so exquisitely were these delicately-constructed instruments provided with adjustments and compensations for the great extremes of temperature, that one of them, after having been exposed to a polar winter, is returned with a change in its daily rate, during 17 months, of only the three-hundredth part of one second of time.

Cough Drops.

Take tincture of bloodroot, syrup of ipecacuanha, syrup of squills, tincture of balsam tolu, and paregoric, of each one ounce. Mix.

Used in all severe coughs from colds; it is a valuable mixture. Dose, half to one drachm whenever the cough is severe.

© 1852 SCIENTIFIC AMERICAN, INC

TO CORRESPONDENTS.

We have received a small box containing models of a Blower and Connection for Hubs and Axles: the person who sent them will oblige us by giving his address that we may communicate with him.

G. R. P., of N. H.—You had better write to C. F. Mann, of Troy, N. Y., for such information about the engine as you require, as we are not able to give it fully. We do not see anything patentable in your method of constructing fence.

T. J. A., of Ill.—With the exception of the springs, the same kind of wheel is described and illustrated in Vol. 4, History of the Rotary Engine. We cannot advise you to apply for a patent.

C. C, of Mass.—We have never known of a table for locomotives constructed like the one represented in your letter, and think it new. You had better ascertain whether it will be likely to meet approval from Companies before attempting to patent it.

C. D. H., or N. Y.—The notice was sent by mistake: your name we found entered correct upon our books.

A. R., of N. Y.—Upon examination of your model for propelling canal boats, we find it is not new. A similar plan is illustrated in Reese's Encyclopædia.

A. S. P., of N. C.—The drawings of your Cart and Scraper is believed to represent a patentable invention.

J. C. S., of N. Y.—No part of a caveat fee can be withdrawn from the Patent Office on the abandonment of a case, but by paying $10 more into the office, and furnishing a model, new drawings, and specification, the application may be withdrawn, and the amount of the original caveat fee ($20) be recovered.

E. L. H., of N. Y.—What would you do with the cross-ties in forming your trough? The way to throw the water from the trough, you have not explained. The idea is new. If made to operate economically, it is a better plan than carrying sprinklers.

J. E., of R. I.—You can send us a sketch and description of the improvement, and we will examine it: we have no new publication to send you upon looms.

W. H., of N. C.—We cannot discover any new or patentable feature in your smutting apparatus,—rubbing surfaces working substantially in the manner shown in your sketch, are well known.

A. W., of Texas—No chisels of the size you speak of are furnished with the machine, although they are suitable for cutting with chisels of the size. Your inquiry about the mill stones we have turned over to a party here for attention.

C. H. B., of N. Y.—Size the leather, place on the gold leaf, and impress with a hot iron.

C. H., of S. C.—If common coal gas is mixed with eight times its bulk of air, it will explode with great violence. This was the compound gas, no doubt which exploded in your bellows, for pure hydrogen is never set free by the coal. We see no reason why your plan will not work well. We are always obliged to our subscribers for any new and useful information.

H. U., of N. Y.—We made the corrections in your specifications which were suggested.

Money received on account of Patent Office business or the week ending March 13.

W. T. R., of Ct., $30; J. I. V., of N. Y., $25; J. S. & S J. M., of Ct., $30; W. E. D., of N. Y., $65; J. P. & Co., of Ct., $30; J. T., of N. Y., $20: A. F., of N. Y., $20; W. D. A., of O., $25; S. M., of N. Y., $30; H. W. P., & Co., of N. Y., $20; P. F. H., of N. Y., $20; J. H. S., of N. Y., $5; G. B. P., of Phil., $30.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending March 13

T. B. W., of Pa.; J. I. V., of N. Y.; E. B., of Pa.; A. C. K., of N. Y.; J. T., of N. Y.; W. R., of Mass.; F. O., of N. Y.; P. F. H., of N. Y.

New Arrangement.

Several of our readers have expressed a wish to subscribe for some literary journal in connection with the Scientific American, not feeling able to take both. We have entered into an arrangement with the publishers of the "American Model Courier," of Philadelphia, and the "American Union," of Boston, which will enable us to furnish either of the two, with the Scientific American, for $3 per annum. They are literary journals of the first order, and are widely circulated in all sections of the country.

☞ Parties cannot be allowed an addition of one of the Literary papers, as above, by remitting a single dollar after paying their year's subscription to the Scientific American, and money received under such circumstances will be credited in continuance of the Scientific American.

Patent Laws, and Guide to Inventors.

We publish, and have for sale, the Patent Laws of the United States. The pamphlet contains not only the laws but all information touching the rules and regulation of the Patent Office. Price 12 1-2 cts. per copy.

An Important Paragraph.

Whenever our friends order numbers they have missed—we always send them if we have them on hand. We make this statement to save time and trouble, to which we are subjected in replying when the numbers called for cannot be supplied.

The Post Office Laws do not allow publishers to enclose receipts; when the paper comes regular subscribers may consider their money as received.

Subscribers ordering books or pamphlets are particularly requested to remit sufficient to pay postage.

ADVERTISEMENTS.

Terms of Advertising.

4 lines, for each insertion,	-	-	50cts.
8 " " "	-	-	$1,00
12 " " "	-	-	$1,50
16 " " "	-	-	$2,00

Advertisements exceeding 16 lines cannot be admitted; neither can engravings be inserted in the advertising columns at any price.

☞ All advertisements must be paid for before inserting.

INSTITUTE FOR SURVEYORS AND ENGINEERS, West Bloomfield, N. J.—The next session of this Institute will commence May 1st, and continue five months The course of study embraces Trigonometry, Mensuration of Surfaces and Solids, Heights, and Distances; Navigation, Surveying, Conic Sections, Descriptive and Spherical Geometry, Mechanics, Theoretical Mechanics, Chemistry, Industrial Chemistry, Physics, Industrial Physics, Mechanical Philosophy, Architecture, Steam Engines, Mechanical and Architectural Drawing, &c. &c.—Terms—For board, washing, fuel, lights and tuition, per Session of five months, $125. No extras. References—George Gifford, Esq., 17 Wall st, N. Y; S. R. Parkhurst; Maj. J. D. Stevens, U. S. Engineer; J. W. Adams, 25 Nassau st. WARREN HOLT, Principal.

ADVERTISEMENT—NICKERSON'S PATENT FIRE-ARMS—This is the only species of fire-arms for loading at the breech, that can, with propriety, be adapted to the ordinary musket. Its simplicity admits of great economy and solidity of construction, and is well worthy the attention of merchants, manufacturers, &c., as peculiarly suited to the African, South American, and Indian trade. Fowling pieces may be made with great beauty, dispensing entirely with the ramrod, and are every way preferable to those now in use. Proposals for rights of States, or an interest in the manufacture of the same, will be received (post-paid) by C. V. NICKERSON, Inventor and Patentee, Baltimore, Md. 27 2*

SCHENCK'S MACHINERY DEPOT, No. 64 Courtland st., N. Y.—Has on hand a great variety of Slide and Hand Lathes, Upright Drills, Steam Engines, of 3 1-2 and 6 horse power, and will receive order for engines of any size; Universal Chucks, Iron Planers, White's Patent Lathe for turning Railroad Car Axles, Hand Punches, and Shears; F. Harriss & Son's Scrut and Scouring Machines; Fairman's Chuck Lathe for Boring Car Wheels, &c., all of which I will sell as low and upon as accommodating terms as any house in the city.
27 5* SAM. B. SCHENCK.

SHINGLE MACHINES.—WANTED—Information in regard to Burt's or any other good machine for sawing shingles; price, weight, size, and power required, work performed, with any other particulars requested. Address FREDK. G. JENNE, 142 Bridge st., Brooklyn, L. I. 1*

DRILLING MACHINES—Self-Acting Drilling Machines, of the best construction, capable of drilling holes from one-eighth inch to three inches diameter, with a suitable feed, manufactured and for sale at the Atlas Foundry, corner of Green and Wayne sts., Jersey City. JOHN D. WARD. 27 4*

JOHN W. GRIFFITHS—Ship Builder and Marine Architect, 658 Fourth st., N. Y., furnishes models and draughts of all description of vessels, with the computation of stability, capacity, displacement, and necessary amount of impulsion. Propelling power located and proportionably adapted to the form of the vessel. whether sailing or steaming. Mr. G. also superintends the construction of vessels, and may be consulted upon all subjects pertaining to the various departments of the science or practice of ship building. Draughts forwarded by letter to all parts of the world, and to any desired scale; all letters must be post-paid. 27 13*

LEONARD'S MACHINERY DEPOT, 109 Pearl-st. and 60 Beaver, N. Y.—Leather Banding Manufactory, N. Y.—Machinists's Tools, a large assortment from the "Lowell Machine Shop," and other celebrated makers. Also a general supply of mechanics' and manufacturers' articles, and a superior quality of oak-tanned Leather Belting.
27tf P. A. LEONARD.

COTTON MACHINERY—One new Ring and Traverser Warp Frame, 156 spindles, and three new Looms, built in the best manner by the Mateawan Co., and for sale at 60 Beaver st., N. Y., by
27 3* P. A. LEONARD.

A SCREW PROPELLER FOR SALE—6 feet in diameter, and 15 feet pitch, made of wrought-iron: the blades are screwed on the hub, and can be taken off at pleasure. There is also an additional blade. The pattern is the best that has ever been in water. For particulars address J. W. NYSTROM, No. 31 Union st., Philadelphia 1*

ZINC PAINTS—THE NEW JERSEY ZINC CO. will supply their pure Zinc Paints at the following prices:—No. 1, white ground in oil, 9c. per lb.; No. 2 do., 8c. per lb.; No 3 do. 7c. per lb.; brown and black, 5 1-2c. per lb.; dry white zinc 6c. per lb. White zinc paint after several years use in Europe and the United States, has been found to retain its protective properties longer than any other paint, and for whiteness and brilliancy is unrivalled; it is free from poisons; while the same weight covers from 40 to 100 per cent. more space according to surface than the same weight of lead paint. Their Brown and Black zinc paints form a hard metallic coating upon wood, brick, iron, &c, which defies the corroding action of salt water. Dealers supplied on liberal terms by MANNING & SQUIER,
1* Agents, No. 45 Dey street, New York.

STEAM ENGINES AND BOILERS—The patentee is now ready to supply orders for steam engines with Ayer's Patent Improved Boiler of any size required. These boilers occupy but little space, can be set up without brick work, and will make more steam with the same fuel than any other boiler.s A self-acting feeder furnishes a constant supply of water, preventing thereby, in a great degree, the danger of explosion. Where doubts are entertained as to the superiority of these boilers, I will be content to receive for the right one-fourth of the value of the fuel saved by their use. Portable engines furnished to order. E. AYER, Patentee, Norwich, Conn. 26 7*

J. ADAMS & SONS, AMHERST, MASS.—Patent Felly Machine. Belden & Colton, 98 Chamber st, New York; John B. Wynn, Anderson C. House, S. C.; Agents for sale of rights of machines and territory. Whitman & Co, Baltimore, Md.; P. A. Leonard, New York City; Agents for sale of Machines. 25 4*

A. B. ELY, Counsellor at Law, 46 Washington st., Boston, will give particular attention to Patent Cases. Refers to Munn & Co., Scientific American. 13tf

CLOCKS FOR CHURCHES, PUBLIC BUILDINGS, RAILROAD STATIONS, &c., and REGULATORS FOR JEWELLERS.—The undersigned having succeeded in counteracting entirely the influence of the changes of the temperature upon the pendulum, and introduced other important improvements in the construction of clocks, are prepared to furnish an article, superior to any made in the United States, (the highest grade warranted to vary less than two minutes in twelve months). Glass dials for illumination furnished. Address SHERRY & BYRAM, Oakland Works, Sag Harbor, Long Island, N. Y.

"At the Oakland Works of Sherry & Byram there are made some of the finest clocks in the world."—[Scientific American.

"Mr. Byram is a rare mechanical genius."—[Jour. of Commerce. 26tf.

DRAUGHTING BOARDS.—CHAMBERLIN'S PATENT, 23x29 inches, 28 feet of various scales, arranged for draughting of all kinds with dispatch, and mechanical device for ready adjustments of draught sheets, of thorough made and elegant appearance, approved by the American Institute, N. Y., and various other authority. Price with T rule $10, can be sent by express. Address, post paid, H. W. CHAMBERLIN, Pittsfield, Berksire Co., Mass.
24 4*

THE SUBSCRIBER is now finishing four 14 horse engines, with boiler and apparatus all complete—price $1200 each. Several 6 horse engines extremely low: also, several of smaller capacity, completely; also, several power plainers, now finishing. Galvanized chain for water elevators, and all fixtures—price low—wholesale and retail. Orders, post-paid, will receive prompt attention. AARON KILBORN.
No. 4 Howard st., New Haven, Ct. 23 10*

TO FELLOE AND SNATH MAKERS—The undersigned having purchased the entire right of A. W. Johnson, for his machine for bending carriage felloes, &c., are now prepared to sell State or county rights for said machine; having used said machine for several years, we know it to be a saving in timber of 30 per cent, and more expeditious. Persons can see one of the machines at work at the manufactory of W. S. Johnson & Co., St. George's, Del.; also felloes of all kinds. Shafts and carriage stuff always on hand, and at prices to suit dealers in the above. WM. G. JOHNSTON & Co.,
22 10* St. George's, Del.

A CARD—The undersigned begs leave to draw the attention of architects, engineers, machinists, opticians, watchmakers, jewellers, and manufacturers of all kinds of instruments, to his new and extensive assortment of fine English (Stubbs) and Swiss Files and Tools; also his imported and own manufactured Mathematical Drawing Instruments of Swiss and English styles—which he offers at very reasonable prices. Orders for any kind of instruments will be promptly executed by F. A. SIBENMANN, Importer of Watchmakers' and Jewellers' Files and Tools and manufacturer of Mathematical Instruments, 154 Fulton st. 23 13*

IRON FOUNDERS MATERIALS—viz.: fine pulverized Sea Coal, Anthracite and Charcoal, Black Lead and Soapstone Facings. Iron and brass moulding sand; Core sand and flour; English Fire Bricks for cupolas, &c. Fire Sand and Clay—for sale by G. O. ROBERTSON Liberty place, (near the Post Office) N. Y. 23 10*

VENTILATION—In reference to the advertisement which I have had in this paper for some time, and also in reference to the reward offered by F. M. Ray "for the best method of excluding dust from cars when in motion," I beg to inform car building companies, railroad companies, and steamboat companies, that my patent includes the Ventilation of all these vehicles, and covers the whole ground of "excluding dust," &c. I expect to be in New York and Boston some time next month, of which notice will be given in some of the daily papers, as also of the place where I may be found. H. RUTTAN.
Coburg, Canada, Feb., 1852. 24 5*

TO COTTON MANUFACTURERS AND MACHINISTS—The undersigned having had thirty-five years' experience in the manufacturing and machine business, is desirous of obtaining a situation as foreman or agent in the above branches; would have no objects to go South or West; the best of reference can be given. Letters addressed to CHARLES E. MOORE, Groveville, Mercer Co., N. J., will be attended to promptly. 24 4*

TRACY & FALES, RAILROAD CAR MANUFACTORY—Grove Works, Hartford, Conn. Passenger, freight, and all other descriptions of railroad cars and locomotive tenders made to order promptly.
26tf

POST'S PATENT SLIDING DOOR FRONTS—for stores and Public Buildings; a new, cheap, and simple fixture for securing store fronts, which renders them fire and burglar proof, has been invented and patented by the subscriber, who is now prepared to sell rights. Messrs. Quarterman and Son, 114 John st, N. Y., are general agents. Address, (post-paid) Wm. POST, Architect, Flushing, L. I. 25tf

MECHANICAL DRAWINGS—J. H. BAILEY, draughtsman, agent for the sale of patent rights, Inventions, machinery, &c., office, Tryon Row Harlem Railroad Buildings, opposite City Hall, 26 2*

MALLEABLE IRON FOUNDRY, EASTON, Mass—The subscriber continues to manufacture castings of every variety, for machinery and other purposes, of the best quality, at the above establishment. We have facilities for making castings 5 1-2 feet in length. Persons wishing castings can send patterns to Eastern Express, Boston, Mass. All letters will be promptly attended to.
2110* DANIEL BELCHER.

NEW HAVEN MANUFACTURING COMPANY, Tool Builders, New Haven, Conn., (successors to Scranton & Parshley) have now on hand $25,000 worth of Machinist's Tools, consisting of power planers, to plane from 5 to 12 feet; slide lathes from 6 to 18 feet long; 3 size hand lathes, with or without shears; counter shafts, to fit all sizes and kinds of universal chuck gear cutting engines; drill presses, index plates, bolt cutters, and 3 size slide rests. The Co are also manufacturing steam engines. All of the above tools are of the best quality, and are for sale at 25 per cent. less than any other tools in the market. Cuts and list of prices can be had by addressing as above, post-paid. Warehouse No. 12 Platt st., New York, S. C. HILLS, Agent N. H Man'g Co. 25tf

BEARDSLEE'S PATENT PLANING MACHINE, for Planing, Tonguing and Grooving Boards and Plank.—This recently patented machine is now in successful operation at the Machine shop and Foundry of Messrs. F. & T. Townsend, Albany N. Y.; where it can be seen. It produces work superior to any mode of planing before known. The number of plank or boards fed into it is the only limit to the amount it will plane. For rights to this machine apply to the patentee at the abovenamed foundry—or at his residence No. 764 Broadway; Albany. GEO. W. BEARDSLEE. 23tf

PAINTS, &c. &c.—American Atomic Drier, Graining Colors, Anti-friction Paste, Gold Size, Zinc Drier, and Stove Polish.
QUARTERMAN & SON, 114 John st.,
23tf Painters and Chemists.

MACHINERY.—S. C. HILLS, No. 12 Platt-st. N. Y. dealer in Steam Engines, Boilers, Iron Planers, Lathes, Universal Chucks, Drills; Kase's, Von Schmidt's and other Pumps; Johnson's Shingle Machines; Woodworth's, Daniel's and Law's Planing machines; Dick's Presses, Punches and Shears; Morticing and Tennoning machines; Belting; machinery oil, Beal's patent Cob and Corn mills; Burr mill and Grindstones; Lead and Iron Pipe &c. Letters to be noticed must be post-paid. 26 tf

WOODWORTH'S PLANING MACHINE—For sale, the right to use this justly celebrated labor-saving machine in the following States, viz., Pennsylvania west of the Allegheny Mountains, Virginia west of the Blue Ridge, Ohio, Indiana, Kentucky, Tennessee, Wisconsin, Iowa, Missouri, Arkansas, Texas, Louisiana, Florida, Alabama, and Mississippi. For particulars apply to the Proprietor, ELISHA BLOOMER, 208 Broadway. 17 12*

WOOD'S IMPROVED SHINGLE MACHINE—Patented January 8th 1850, is without doubt the most valuable improvement ever made in this branch of labor-saving machinery. It has been thoroughly tested upon all kinds of timber and so great was the favor with which this machine was held at the last Fair of the American Institute that an unbought premium was awarded to it in preference to any other on exhibition. Persons wishing for rights can address (post-paid) JAMES D. JOHNSON, New Haven, Ct.; or WM. WOOD, Westport; Ct., All letters will be promptly attended to. 22tf

THE EXCELSIOR Sand and Emery Papers. are offered as new and superior articles, being manufactured by an improved process; the paper is made from the best Manilla hemp, and consequently is very strong and lasting; the grit is of the sharpest and most enduring kind, and is firmly attached to the paper with a remarkable evenness of surface; their freeness from ridges, stripes, and other imperfections, recommend them to the notice of consumers. These papers have been used by many of our first mechanics, and are pronounced superior to all others. Every sheet is stamped WM. B. PARSONS, and warranted. Samples furnished at the office, No. 187 Water street, New York. WM. B. PARSONS,
14 6m* Sole Proprietor.

P. W. GATES'S PATENT DIES FOR CUTTING SCREWS—Patented May 8th, 1847.—This Die cuts Screws of any size, V or square thread, by once passing over the Iron. Also, Lead Screws for Lathes, Hoisting Screws, &c. All orders for Dies and Taps, with or without machines, will meet with prompt attention by addressing P. W. Gates, or Gates & McKnight, Chicago; Marshall, Bement & Colby, Philadelphia; Woodburn, Light & Co., Worcester, Mass. References—All the principal machine shops in New York, Philadelphia, and Boston. 13 6m*

MACHINIST'S TOOLS.—Marshall, Bement & Colby, (successors to E. D. Marshall & Co) Callowhill street, west of Schuylkill Third, Philadelphia, Pa., are prepared to make to order, and keep on hand Machinist's Tools, such as Planing and Compound Planing Machines, on a new and improved plan, Slide and Hand Lathes, Upright and Horizontal Drills, Upright Boring Machines, Improved Screw and Bolt Cutting Machines, with P. W. Gates' Patent Dies and Taps, or with the common Dies, Gear Cutting Engines, Slotting and Paring Machines. Also keep on hand Washburn & Whiton's Patent Scroll Chucks, of all sizes. All orders by letter or otherwise will receive their prompt attention. E. D. MARSHALL, WM. B. BEMENT, G. A. COLBY. 21 10*

CHAS. W. COPELAND, Consulting and Mechanical Engineer, Surveyor of Steam Machinery, &c., No. 68 Broadway, N. Y., superintends the construction of steam vessels and steam engines, and machinery of every description; specifications and contracts prepared; also general plans and drawings in detail furnished. Steam engines surveyed and valued, and condition reported. Mr. C. also acts as agent for the purchase and sale of steam vessels, steam engines, boilers, &c. 21 10*

MANUFACTURE OF PATENT WIRE Ropes and Cables—for inclined planes, suspension bridges, standing rigging, mines, cranes, derick, tillers &c.; by JOHN A. ROEBLING; Civil Engineer—Trenton N. J. 47 1y*

PATENT CAR AXLE LATHE—I am now manufacturing, and have for sale, the above lathes; weight, 5,500 pounds, price $600. I will furnish a man with each lathe, who will turn and finish axles for 50 cents each, if desired. I have also for sale my patent engine screw lathe, for turning and chucking tapers, cutting screws and all kinds of common job work, weight 1500 lbs., price $225. The above lathe warranted to give good satisfaction. J. D. WHITE, Hartford, Ct. 7 6m*

LOGAN VAIL & CO., No. 9 Gold street, New York, agents for George Vail & Co., Speedwell Iron Works, have constantly on hand Saw Mill and Grist Mill Irons, Press Screws, Bogardus' Horse-Powers, and will take orders of Machinery of any kind, of iron and brass; Portable Saw-mills and Steam Engines, Saw Gummers of approved and cheap kind, &c. Gearing, Shafting, large and small, cast or of wrought iron. 11 1y

HAWKIN'S Stave Dressing Machine—Is now in operation in the city of Milwaukie, Wis., and will dress from 6 to 8000 staves per day, ready for the truss hoops, and at one operation. Rights for States and Counties, and also machines, for sale, apply to WM. HAWKINS, Patentee, Milwaukie, Wis.
15 20*

1852 TO 1856.----WOODWORTH'S PAtent Planing, Tongueing, Grooving, Rabeting, and Moulding Machines.—Ninety-nine hundredths of all the planed lumber used in our large cities and towns continues to be dressed with Woodworth's Patent Machines. Price from $150 to $760. For rights in the unoccupied towns and counties of New York and Northern Pennsylvania, apply to JOHN GIBSON, Planing Mills, Albany, N. Y. 26tf

© 1852 SCIENTIFIC AMERICAN, INC

SCIENTIFIC MUSEUM.

Unrolling the Mummy of a Bishop.

The unrolling of mummies has become a kind of mania. Who can forget the mummy maid unrolled by Gliddon last year in Boston, which turned out to be a man? Mr. Gliddon, we see, recently unrolled another one at New Orleans, which was a female, and maintained its sex. The most important unrollment of any mummy which has taken place during all the years of our remembrance, was one which recently took place in London, it being nothing less than the mummy of an old Bishop. The mummy was discovered not long since in the east wall of St. Stephen's Crypt, Westminster, and although there was no positive proof of its identity, it is presumed that it was the body of Lydwolfe, Bishop of St. David's, who died in the 15th century. The venerable body was not safe from modern curiosity. On the first of last month, Dr. Pettigrew was appointed to unroll him before deputations from the British Museum, antiquarian societies and scientific men. After some little difficulty, a layer of five thick canvas cloths was removed from off the face. A second series, bound round by string, then presented themselves. In due course these were loosened, and to the great satisfaction of all present, on being raised, the face was disclosed in a most remarkable state of preservation. The cartilage of the nose was not at all decayed, and with the lips and other portions of the face remained perfectly flexible to the touch. Even the expression of the countenance was in a degree retained, and it was remarked that identity of the individual would not have been impossible had any compeer of his venerable age been present. The abdomen was found to be folded in 10 layers of canvas cloth, each of which appeared to have been soaked in wax and nitre, or salts of some such description. On the wrappers being removed, the stomach was found to have retreated from the cloth, and to have become a mass of adipose matter, in which state the legs and arms were also found. No writing of any description was discovered in the folds, nor was any mark leading to an identity of the individual found. The body measured 5 feet 11 inches in length, and, judging from the front teeth remaining, three or four of which in the lower jaw were much worn, must have been that of a very aged man. The mouth was filled with tow, which had evidently been steeped in wax, and a small quantity of hair remained on the chin and upper lip. The body was enclosed in 10 layers of very thick canvas, and bound round by string, the latter being in a very remarkable state of preservation. The crozier was entirely of oak, with an elaborately carved crook—the whole measuring six feet two inches in length. The examination having been completed, the remains were placed in a strong elm coffin and screwed down. It is understood the body will hereafter be replaced as nearly as possible in the spot where it was discovered.

Cotton in Russia.

A report from the Russian Minister of Agriculture and Commerce, states that cotton can be cultivated to a considerable extent in Trans-Caucasia. Cotton has been grown in the province of Armenia for a long period; though the Armenian cotton has generally been of a very short staple and poor quality. The production at present is about 130,000 pouds, (4,685,000 pounds), and this is mostly used in the country for spinning, and in the manufacture of wadding. A cotton not inferior to the Egyptian is cultivated in four villages near the Klow, but the produce is only about 180,000 pounds. In Trans-Caucasia there are more than 1,100,000 acres of land suited to the culture of cotton, and a sixth part of this quantity would be sufficient to supply the whole cotton demand of Russia.

A Meteoric Engine.

At Newark, N. J., on Thursday morning last week, a train was passing around a curve of the New Jersey Railroad, when a "solution of continuity" occurred between the locomotive and the passenger cars behind it. The locomotive darted off the track, making tracks for a small building, in which lottery policies were formerly vended. The proprietor, with his subs, beheld the iron officer and his search warrant, and fled, and they had hardly cleared the threshold in the rear, when their customer enlarged the opening in front, and walked in. The investment certainly turned out badly; the locomotive drew a blank instead of its ordinary train of cars; while the cars themselves proceeded calmly along through the city to their ordinary stopping place, to the intense amazement of those who were unaware of the engine's eccentricity.

It was lucky that the link parted between the engine and the cars, or the whole train would have been made partners of the eccentric escapade.

On Boilers.---No. 17.

FIG. 31. FIG. 30.

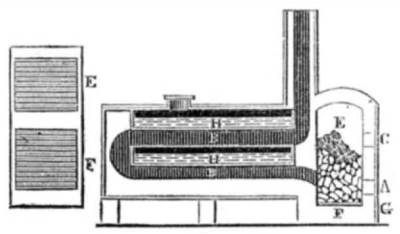
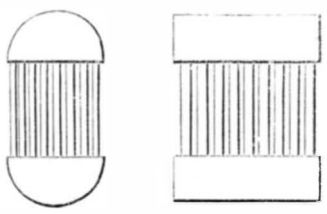


Figure 30 is a vertical section of the Furnace of C. Howell, of Philadelphia, for which a patent was obtained in 1828, for burning anthracite coal. Fig. 31 is a plan view. A A are tuyeres for introducing the blast; B B are the flues; C C are charging doors for the coal; D D are cleaning-out doors, which are occasionally used as draught doors. E is a line of upper surface of coal; F F are grate-bars; G G are openings to promote the draught before the blast is applied. This was the first patented plan for burning anthracite coal under steam boilers, in our country, with the blower attached. This improvement, to employ anthracite coal, has done wonders for the steam navigation on some of our rivers, and its value for all stationary engines has been of immense benefit to all our Eastern and Middle States. It is not possible to estimate the amount of benefit conferred, by this improvement upon the city of New York alone. Without it we could not employ steam engines so extensively, as the cost of wood or bituminous coal would be too great. Fifteen years ago all the steamboats running along our coasts, and on the Hudson River, used wood for fuel; the expenses were enormous, and could not now be maintained. It required immense docks to hold the wood, and the for-

FIG 32 FIG. 33.



ward-deck of a boat was occupied with nothing else. Sixty cords of wood, at $4 per cord, were consumed in a single passage to Albany, in a large steamboat, costing, altogether, $240. The cost for coal, to do the same work, does not amount to more than $50 now. Anthracite coal has done wonders to make cheap passages on our steamboats, and this has been a benefit to the whole people. We often hear of the steamboat itself, the telegraph, and other prominent inventions, spoken of as great boons conferred upon mankind; he who considers the successful application of anthracite coal (as a fuel substitute for wood, on our steamboats) a small invention, is no just judge. We hope the time is not very far off when anthracite will be employed on all our locomotives, as a substitute for wood fuel.

Figs. 32 and 33 are end and side elevations of the boiler of Dr. E. Nott, designed for the steamer "Novelty," a Hudson river boat, in 1830. The boiler consists of an upper and lower chamber, connected by small vertical tubes; the heat passes between these tubes. There are no side chambers or pipes to carry the water downwards to the bottom chamber to cause a continual circulation. It is not a good boiler.

Expedition to Japan.

An expedition is fitting out at Washington for Japan. Its object, it is stated, is to force the people into "free trade" with our merchants.

Forty Miles an Hour.

A correspondent of the Albany Journal, in an article under the title of "Railroad Accidents and Legislation Thereon," speaking of speed at forty miles an hour says:—

"Men who are used to the railroad, and to the working of the rolling stock, know what such a rate of speed is and how wonderful is the operation. Let us examine it. An engine, tender and train of four passenger cars and one baggage car, when properly loaded, will not be much less than eighty tons weight. This body at the rate of forty miles an hour, moves about sixty feet in a second. That is, between two beats of a clock, it flies across a common street. The driving wheels, if six feet in diameter, revolve three times in a second. The common wheels of the cars revolve about eight times in a second. The revolutions of the driving wheels are produced by the motion of the piston in the cylinder. To each revolution of this wheel, there are two motions of the piston. Thus there are six motions of the piston to the second, and at each of these motions a valve is opened or closed, for the taking or exhausting steam from the cylinder. This must be a complete and perfect operation, each time, to produce the speed. But there are two cylinders, working at opposite sides of the engine, and at different points on the crank of the wheel, or axle, as may be, and they do not move at the same instant, or, rather, they alternate, and thus, each performing the same office, they divide a second into twelve equal parts or periods, in each of which the perfect and complete operation of taking or exhausting steam is performed, and at the end of each motion the piston actually stops and turns the other way. Now, the eye could not count or comprehend these motions. The ear could not distinguish the exhausts though each is as perfect and distinct as when the engine is drawing a heavy load four or five miles an hour, when it seems to labor and to cough as if struggling with its load. This is a speed of forty miles an hour analyzed. Now must there not be very greatly increased liability to accident at such a rate of speed? Who can see the strains upon parts of machinery that may result in a fracture when moving at this rate?"

[There are some men so credulous as to believe that a steam carriage in England has run on a McAdamized road at the rate of 40 miles per hour, and have been foolish enough to publish this. They say that steam carriages were successful in England; we say no. They say they can be successful here on plank roads; we say, prove it. If they do not do this, we will class the statements of some of them with the "static-pressure."

Water and Salts—Heating by Water.

Water will only dissolve a certain quantity of most of the crystalline substances termed salts; for instance, if a large quantity of common salt be added to a pint of water, the mixture stirred, and then allowed to stand, it will be found that only part of the salt has been dissolved; and if the same experiment be performed with another pint of water, but with a different quantity of salt, so long as in each case a part of the salt remains undissolved, it will be found, on decanting off the clear solutions and boiling each separately to dryness, that exactly the same quantity of salt has been dissolved by each pint of water, provided the temperature in each experiment was the same. In this instance we should find that 100 pounds of boiling water will always dissolve 40 lbs. of common salt, and never more, whatever be the excess of salt employed. The water is then said to be a saturated solution. The quantity of any particular salt that water is capable of taking up or dissolving, varies generally with the temperature of the water. In most cases, hot water will dissolve much more of a salt than cold; but there are exceptions to this, a few salts being more soluble in cold than in hot water. Water does not dissolve the same quantity of the different salts—far from it; some are nearly insoluble, while others are dissolved in very large quantities by a small quantity of water. As a saturated hot solution of salt cools, it deposits a portion of the salts in a crystallized form.

In the act of separating from the water in which they were dissolved, most crystals carry with them a portion of water, which is essential to the regularity of their form, and cannot be separated from them without reducing the crystals to a shapeless mass. This water is termed their water of crystallization. Water heated from 32° to 212° Fah., expands 1-32 parts of its bulk, that is, if 22 pints of ice-cold water be heated to the boiling point, without allowing any of the steam to escape, it will be found that the water has increased so much in bulk, that it will then fill 23 pints; therefore, also, it follows, that a pint of boiling water is not so heavy as a pint of water at 32° by nearly one ounce. On this fact is founded all the different methods of heating buildings by the circulation of hot water through tubes. The tubes filled with hot water are heated by being fixed so that some part, near the lowest part of the tube, shall pass vertically (or nearly so) through a furnace, and as the water becomes heated it floats (being rendered lighter) to the upper part of the circulating tube, at the same time the cold or cooler water from the lower part of the tube gradually enters the furnace from beneath; this, becoming heated, passes onwards, and thus a constant circulation is maintained till the whole of the water in the tube becomes heated to the required degree.

LITERARY NOTICES.

ANNUAL OF SCIENTIFIC DISCOVERY FOR 1852.—We have received a copy of this very useful work, published by Gould & Lincoln, Boston, and edited by D A. Wells, A. M. This work is a very valuable one, it is a collection of all the leading facts, in Science and Art, which have been brought to light during the past year. It has a good steel engraving of Prof. Henry, of the Smithsonian Institute—the first inventor of the Electro Magnet, and is got up in good style. The Notes by the Editor, Mr. Wells, on the progress of science during the past year, are very excellent. The Scientific American is very creditably noticed, as the Repertory of American Inventions, and the mirror of American Mechanic Arts.

CHILDREN—Their Hydropathic Management in Health and Disease—a descriptive and practical work, designed as a guide for families and physicians, illustrated with numerous cases, by Dr. Joel Shew, —Fowlers & Wells, publishers, New York and Boston, pp. 430. This work is written in an able fearless and comprehensive style, and contains much sound practical advice, worthy the attention of mothers and nurses; it is, in fact, a good family book. Dr. Shew knows the value of the medical profession, but such publications are valuable to families where the physician is not at hand. The remedial virtues of water have been known for ages, and all good physicians recommend the bath, in sickness and health, as an auxiliary to other remedies and as a preservative agent.

HUNT'S MERCHANTS' MAGAZINE.—The well-earned reputation of this magazine requires no word from any one to commend it. There is one article in the March number—"Fisheries of the United States,"—which is worth the whole year's subscription.

The "Phrenological Journal" and the "Water Cure Journal," for March, are interesting numbers, filled with sound practical matter worthy of attention. They are both published monthly for $1 per annum, each, by Fowlers & Wells, 131 Nassan street.

INVENTORS

Mechanics and Manufacturers

Will find the SCIENTIFIC AMERICAN a journal exactly suited to their wants. It is issued regularly every week in FORM SUITABLE FOR BINDING. Each number contains an Official List of PATENT CLAIMS, notices of New Inventions, Chemical and Mechanical; Reviews, proceedings of Scientific Societies; articles upon Engineering, Mining, Architecture, Internal Improvements, Patents, and Patent Laws; Practical Essays upon all subjects connected with the Arts and Sciences. Each Volume covers 416 pages of clearly printed matter, interspersed with from Four to Six Hundred Engravings, and Specifications of Patents. It is the REPERTORY OF AMERICAN INVENTION, and is widely complimented at home and abroad for the soundness of its views. If success is any criterion of its character, the publishers have the satisfaction of believing it the first among the many Scientific Journals in the world.

Postmasters, being authorized agents for the Scientific American, will very generally attend to forwarding letters covering remittances.

MUNN & CO.,
Publishers of the Scientific American,
128 Fulton street, New York.

INDUCEMENTS FOR CLUBBING.

Any person who will send us four subscribers for six months, at our regular rates, shall be entitled to one copy for the same length of time; or we will furnish—

Ten Copies for Six Months for	$ 8
Ten Copies for Twelve Months,	15
Fifteen Copies for Twelve Months,	22
Twenty Copies for Twelve Months,	28

Southern and Western Money taken at par for subscriptions, or Post Office Stamps taken at their full value.

N. B.—The public are particularly warned against paying money to Travelling Agents, as none are accredited from this office. The only safe way to obtain a paper is to remit to the publishers.

© 1852 SCIENTIFIC AMERICAN, INC